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ABSTRACT

In most countries, industrialization is increasingly regarded as one of the principle activities needed to achieve and sustain a high level of development. In order to plan, implement, and operate the many complex programs and projects, a number of development training institutes have come into being. A 1962 survey revealed that the focus of the training was on problems of economic planning and that industrial development was considered only incidentally. In order to find ways to overcome this, three agencies established the first inter-regional Working Part on the training of economic administrators of developing countries in industrial development. This document contains the report of the Working Party's meeting in Paris from September 2-10 in 1965. Selected contributions of the organizers and participants in the meeting are included. (GEB)

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Training of Economic Administrators for Industrial Development

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TRAINING OF ECONOMIC ADMINISTRATORS FOR INDUSTRIAL DEVELOPMENT

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION, VIENNA

TRAINING FOR INDUSTRY SERIES No. 1

TRAINING OF ECONOMIC ADMINISTRATORS FOR INDUSTRIAL DEVELOPMENT

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INTRODUCTION

During the last two decades, almost every developing country has undertaken programmes of economic and industrial development. In this task, the role of government has assumed special significance. The more extensive the industrial, economic and social development aimed at, the more complex become the tasks of the economic administrators charged with the formulation and implementation of development programmes. That being the case, there is an only too obvious dearth of adequately trained personnel in the developing countries capable of carrying out the new planning and administrative functions. Even were foreign experts available to engage in a variety of these functions, the problem would not be altogether resolved, since effective action often requires an analysis of local circumstances which only national personnel, with adequate educational background and training, can successfully undertake. It is thus increasingly recognized that inadequate administrative and managerial capacity is a significant obstacle to the achievement of the targets set by national development plans in many developing countries.

Industrialization is increasingly regarded as one of the principal economic activities needed to achieve and sustain a high level of development. Consequently, it has been given special attention in almost every development programme. Yet industry, perhaps more than any other sector in the economy of developing countries, needs adequately trained personnel to plan, implement and operate its many complex programmes and projects. The tasks that have to be carried out by economic administrators in the industrial sector range from the selection of prospective lines of industrial development and the balancing of inter-sectoral and inter-temporal dependencies of the various industrial branches, to the designing of particular investment programmes and the evaluation of the results achieved by such programmes. Thus government officials are required to be economic and industrial planners and public sector entrepreneurs in varying degrees at different stages in their careers in government service. The complex tasks involved in the industrial development process require a combination of skills in fields such as economics, accountancy, statistics, law, public administration or engineering. Thus, while an economic or industrial administrator may have had training in one such field, he is also required to handle questions that demand a better appreciation of other disciplines.

A number of development training institutes, located mostly in advanced or already fairly developed countries, have now come into existence. While most of them offer courses in economic planning, development economics, and selected areas of economic development, none offers comprehensive training in industrial development. This gap was evident from a survey conducted by the United Nations Centre for Industrial Development[1] in 1962, concerning the area of coverage of the various training institutes. The replies made it clear that the focus of training was on problems of economic planning and that industrial development was considered only incidentally. Such policies are far from satisfactory having regard to the enormous need for educating and training government officials in a large number of countries which have introduced or are about to introduce comprehensive industrialization schemes.

Recognizing these needs, the Centre for Industrial Development has been giving serious attention to the problem of training economic administrators in order to accelerate the industrialization of the developing countries. Three main areas were found to be of particular importance in this connexion: (*a*) the establishment of an understanding of the process of industrialization and of the institutional framework within which it takes place; (*b*) the definition of the roles and functions of economic administrators dealing with various aspects of industrial development policy and (*c*) the planning of organizational forms and methods of operation of training programmes for such administrators, bearing in mind the conclusions reached in considering the issues under (*a*) and (*b*) above. It was felt that there was a need to examine these three main aspects and their functional interrelationships objectively, in order to provide the necessary background against which the requirements for further action could be more clearly defined. The Centre for Industrial Development and the Bureau of Technical Assistance Operations, in co-operation with the Development Centre of the Organization for Economic Co-operation and Development, organized the first Inter-regional Working Party on the Training of Economic Administrators of Developing Countries in Industrial Development; the Working Party met in Paris from 2 to 10 September 1965.

The present publication contains the report of the Working Party as well as selected contributions by the organizers of and participants in the meeting. It is hoped that it will arouse substantial interest in the subject and contribute to the planning and implementation of effective training programmes to assist the developing countries in building up their cadres of skilled and creative economic administrators.

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[1] In accordance with GA Res.2152 (XI) the work of the Centre for Industrial Development (CID) was taken over on 1 January 1967 by the United Nations Industrial Development Organization (UNIDO).

PART I

REPORT OF THE INTER-REGIONAL WORKING PARTY ON THE TRAINING OF ECONOMIC ADMINISTRATORS OF DEVELOPING COUNTRIES IN INDUSTRIAL DEVELOPMENT

INTRODUCTORY REMARKS

The Working Party realized from the outset that it was confronted with a difficult task. It was required in the first instance to understand and assess a process of industrialization which takes various forms. Secondly, it had to examine the form of organization which a country adopts in order to foster industrial growth. Thirdly, it had to identify the functions and levels of personnel working within the organizational structure. Finally, the Working Party was faced with the task of suggesting a practical programme of action which, by providing training, would contribute to improving the calibre and efficiency of industrial economic administrators.

The Working Party was fully aware of its inability to explore all aspects of the problem sufficiently thoroughly. The time available to it to undertake this study was somewhat limited; moreover, tremendous efforts, a vast amount of data and a large number of specialists would have been needed to deal with the question. Nevertheless, it was felt that an approach to the problem was possible at the meeting, and that that meeting should be considered as only the first in a series.

The Working Party urges the United Nations and the Development Centre of the Organization for Economic Co-operation and Development to transmit its recommendations to all interested national and regional bodies with a view to their implementation, with due regard to local circumstances. In making these recommendations, the Working Party is aware of the experience, responsibility and courage displayed by the civil servants and public officials concerned, who often work under difficult conditions. Most of them acquire valuable experience on the job itself and appreciate the problems involved in undertaking to promote industrial development in their countries. Suggestions for the further training of such officials are based on a general estimation of the magnitude of the problems involved, the background of the officials and the time required to secure the earliest possible implementation of industrial development programmes.

What is attempted here, therefore, is in the first place a presentation of some salient features of these problems to the best of the Working Party's ability. The sections which follow draw attention to certain aspects of the process of industrial development. Secondly, an attempt will be made to indicate broadly the various levels and functions of the economic administrator. Finally, some guide-lines are offered to indicate the direction in which training programmes might be formulated.

THE INDUSTRIALIZATION PROCESS

It is widely agreed that both the need for and the nature of training programmes in industrial development are rooted in the process of industrialization itself, which involves a somewhat complex chain of activities. Hence the Working Party considered it useful to review a wide range of activities involved in the formulation and execution of industrial development programmes and projects, as well as the skills and methods required for the adequate conduct of such activities.

Industrialization is an integral part of the over-all process of development, and all problems related to it have therefore to be considered and resolved within that wider framework. This fact must be borne in mind for effective industrial development planning and implementation, particularly if existing conflicts and imbalances between the various sectors of the national economy are not to be rendered more acute. It must be borne in mind constantly, not only by policy-makers and planners, but also by all concerned with the establishment and operation of programmes for the training of economic administrators in charge of industrial development planning and implementation.

It is equally important to remember that industrialization is a continuous chain movement, and that the strength of the chain will be equal to that of its weakest link. Although it may be worth while to concentrate, temporarily, on strengthening the weakest element of the chain, this should not entail excessive concentration of effort but rather a balance of effort, with continuous attention on the weakest link; this alone can lead to satisfactory results. In undertaking such an effort, it should constantly be remembered that each element must be related to those which come before and after. In order to ensure that the process of industrialization, as well as the over-all development process functions as smoothly as possible, it is most important to have a continuous flow of information on what has been done to date, so that the necessary adjustments may be made in the course of implementation through the "feedback" system.

It is generally recognized that over-all development as well as industrial development can be greatly facilitated by well-organized planning. Such planning, however, must not be regarded as a static intellectual exercise, but as a dynamic process covering both the preparatory planning and the implementation stages. Action should not be postponed until the over-all, sectoral and project plans are fully established; on the other hand, the impact of such action on the economy as a whole must not be neglected. To postpone action would unduly delay the developmental process of any developing country. Moreover, the planner should realize that the value of a plan lies in its possibilities of execution. This implies that the planner should not isolate himself from those in charge of execution, nor from those who make the decisions at the political level. This essential requirement should be impressed upon participants in any advanced and special training programme related to economic or industrial development.

To ensure understanding between the various persons or groups involved in the total planning process, it is indispensable that they should have a common language. This alone will make it possible to arrive at a truly co-operative development effort in which the policy-maker, the planner (whether on the national, regional or local level) and those in charge of execution, down to the level of the operation of a specific private or public enterprise, will be able to perform their own functions with a knowledge and understanding of the functions performed by others. This means that any training programmes aimed at more efficient industrial development should be oriented to the various levels concerned (policy-makers, planners and executives). The programmes offered to these groups must certainly differ according to the present and anticipated social responsibilities of the groups concerned. What matters is that these programmes or courses should have something in common so that there may be better understanding between the various groups.

ROLE OF INDUSTRIAL ECONOMIC ADMINISTRATORS IN THE PLANNING AND IMPLEMENTATION OF INDUSTRIAL DEVELOPMENT

The problem of clarifying the meaning of the term "economic administrator" is complicated by a number of factors. The diversities in functions ranging over the entire process of industrial development at all levels make it difficult to identify the role and function of the economic administrator. There is, in addition, the diversity of the administrative systems employed by the developing countries to tackle problems of economic and industrial development. Finally, there is the diversity in the terminology used to describe such persons. They are referred to as civil servants, planners, managers, technicians, etc. In effect, it was all these that the Working Party had to comprehend in order to arrive at an identifiable classification. Its conclusion is that an industrial economic administrator is every person who has responsibility for, or participates in, devising and/or implementing policies directed towards industrial development.

Emphasis must be placed on the need for distinguishing between the formulation of a plan and its implementation. This distinction will make it possible to identify functions as well as levels of persons undertaking these functions. At the same time, it is recognized that the two functions are in effect part of a single cycle. Another distinction to be made is between the general administrator and the technical administrator, although here again, it is clear that these two categories cannot be divided into water-tight compartments; the technical administrator in particular may well be called upon to assume the role of general economic administrator if, in addition to his technical qualifications, he also possesses the necessary human qualities.

At the planning and policy-making level, the economic administrator is defined as a senior official organizing and co-ordinating the work of experts, with the aim of providing coherent arguments to be used as a basis for the adoption of key decisions concerning structural changes in the national economy. At the implementation level, the economic administrator is defined as a person who gives shape and substance to policies adopted to foster industrialization. He is required to translate targets into projects and to make sub-programmes within the targets operational. Both categories, however, should possess a knowledge of the country and a feeling for the people and their attitudes.

Both in the papers presented to the meeting and in the discussion, attention was drawn to one fact which has an important bearing on the definition of functions and roles of top-level economic administrators and, consequently, on the content and methods of training programmes. This is that planning for industrialization in developing countries is still a process concerning which no uniform and well-established body of knowledge exists. Each country, with its own experience, resulting from its own industrialization efforts, is in fact contributing to the accumulation of knowledge that will hopefully lead to the development of an appropriate methodology of planning for industrialization. This, however, basically affects the role which economic administrators have to play and which cannot be reduced to administrative work *strictu senso.* In addition to possessing general human qualities and the ability to organize the work within their competence, economic administrators have to be equipped with a sufficiently broad knowledge of economics and problems related to industrialization. They must also display a capacity for the imaginative and creative work needed in the search for methods and procedures best suited to the fulfilment of specific tasks. Depending on the level of responsibility at which the administrator functions, some skills will require greater emphasis than others.

Reference was made and emphasis given in the discussion to the role of middle-level economic administrators working in the various ministries and organizations. These administrators play an essential part in preparing the material, processing it and presenting it for policy elaboration and decision-making. Training is most important for this category, as there is a deficiency in both the quality and the numbers available. Quite comprehensive training programmes can be devised for them, as they are able to devote longer periods of time to training than are those at the top levels. Such programmes should be designed to heighten their efficiency in their present functions and to prepare them to assume greater responsibilities. Moreover, specialized functions exist which should be given particular attention; for example, project preparation and evaluation, legislation to promote industrial development, and industrial financing. Training in these areas should be given less on the basis of seniority than on that of responsibility.

The middle-level administrator is best defined in terms of the qualifications he should possess. He should first of all have the ability to administer, that is, to organize his own work and that of others in such a way as to achieve the highest possible degree of efficiency. This requires not only professional knowledge but also, and not least, the human qualities which make it possible for him to communicate with all those concerned with the process of industrial development. He should have a good knowledge of economic factors in order to be able to pass judgement on the economic feasibility of a plan or project and on its effects on the country's economy, and in order to be able to evaluate the impact of policy decisions. Finally, such an administrator should be imaginative and dynamic.

A capable, skilled supervisory staff at the industrial enterprise level is an indispensable condition for the successful execution of industrial programmes, assuming that the requirements for other technical staff and labour force are also adequately met. This is particularly pertinent in view of the ever-increasing influence of international competition in industry, which requires that greater attention should be attached in developing countries to problems of production costs, quality control, modernization, etc. The concept of managerial functions at the enterprise level is relatively easy to define; consequently, the organization of training activities and advisory services for management is an easier task to deal with than others. There is a danger, however, that this important area might be neglected. The Working Party wishes to stress once again the importance of providing training and other facilities for raising managerial skills at the enterprise level, and considers this an essential part of a broader policy aimed at the forming of national cadres of economic and industrial administrators.

NATURE AND CONTENT OF TRAINING PROGRAMMES

In connexion with the use of the word "training" as applied to economic administrators, it should first of all be made clear that the questions discussed below do not relate to "education" as provided through technical schools or regular university programmes. Education is concerned with the development of the qualifications of the individual, while training is concerned with the development and improvement of the organization by enabling an individual to perform better. The Working Party, while emphasizing training aspects, was conscious of the need for the improvement of educational standards generally. Education and training are interrelated and the effectiveness of a person in a given job is dependent on his educational level and on his degree of training.

The benefits of training are self-evident, but the difficulty is to make it practical and acceptable so that it may serve a given need. Among the problems to be resolved is that of the length of training, which is linked to that

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of the period of time persons can stay away from their jobs. Another problem is that of designing suitable programmes to meet a given need. Other, very serious problems are those of the availability of relevant teaching material on various aspects of industrial development and of teaching personnel to use such material.

Training programmes should be organized as far as possible in the environment of the developing countries, that is, either in a specific country or on a regional basis. The action of institutes located in developed countries should be increasingly directed towards special subjects which are not included in the training programmes organized in developing countries. Moreover, such institutes should assist training and research institutes in the developing countries to build up and improve their activities. The institutes in developed countries should constantly keep in mind the conditions under which participants in such programmes will have to use their newly acquired knowledge, and such programmes should include practical work in the economic administration of a given industrial sector of the developed countries.

Training of senior industrial economic administrators

The provision of training for senior industrial economic administrators must be considered in terms of both time and organization, since it would appear that such persons can absent themselves from their jobs for at most seven to ten days. The selection of appropriate subjects, the organization of all the material and the recruitment of high-level experts for such programmes are matters requiring attention. Such efforts, on the other hand, are not uncommon in other areas. Refresher courses are regularly conducted for top business executives by business management institutions. Moreover, the United Nations and other international organizations make a practice of organizing technical meetings of experts.

The Working Party noted with interest the initiative taken by the Development Centre of the Organization for Economic Co-operation and Development in organizing, at the request of Governments of developing countries, part-time seminars on the spot for high-level administrators and policy-makers. These seminars last three weeks and aim, through a detailed discussion of problems related to development strategy and administration, at creating a common language and understanding in regard to these problems.

Consideration should be given to organizing short refresher courses in selected subjects of industrial development. It should be possible through such meetings to identify both administrative and technical problems within the organizations to which participants belong and to discuss measures for dealing with them, with the assistance of experts and with reference to the experiences of other countries. The United Nations and other international organizations should initiate, assist and organize short refresher courses of this type in the developing countries. Thereafter, it should be possible for national organizations to take over some of these responsibilities.

The problems with which senior administrators are currently faced might be taken up for discussion at such courses. These problems would vary from the appraisal of industrial projects, or the procedures to be employed to expedite implementation, to the financing of industrial development and foreign aid. The general purpose would be to afford senior economic administrators an opportunity to exchange views with their counterparts in other branches and to evaluate problems involved in either the planning or the implementation of industrial development. Finally, such courses would supply general administrators with insights into the technical problems which would be submitted to them, and on which they would have to give a final judgement.

Training of middle-level industrial economic administrators

Economic development training institutes, whether intra-regional, regional or national, have only in recent years incorporated in their programmes training courses in industrial development planning and implementation. As mentioned earlier, lack of teaching material has stood in the way of the smooth functioning of existing industrial development training programmes, as well as of the organization of new ones. But even more important are the difficulties encountered in the recruitment of qualified instructors in the field of industrial planning and implementation. These difficulties are augmented by the fact that the industrialization process involves a wide range of subjects and specializations and that it is difficult to find instructors who can cover all subjects. Many, if not most, of the existing training institutes which offer courses in the field of industrial development are geared to the training of middle-level industrial economic administrators with several years of practical experience.

Since the industrial development effort requires an inter-disciplinary approach involving various professions, the emphasis as far as middle-level industrial economic administrators are concerned should be on providing them with a common language. This means that technicians would acquire an economic background and economists a technical background. Administrators would thus achieve a view of the process of industrial development from the planning to the implementation stages. In such a programme, the accent should be on project-level planning, the study of technical and economic aspects of selected industries, policy measures to promote industrial development, and the industrial aspects of regional planning. The Working Party feels that a training programme of from three to four months' duration would be adequate for industrial economic administrators at this level.

Training in specific aspects of industrial development

While well-rounded programmes would be useful in giving an awareness of the industrialization process to middle-level officials, as indicated above, the Working Party also recognizes the need for training programmes in specified areas of industrial development. They might be referred to, for convenience, as specialized training programmes. Specialized courses might be offered on such subjects as market analysis, industrial project appraisal, financing of industrial development, planning of industrial complexes, regional industrial planning, industrial manpower requirements, industrial policies and programming, regional industrial integration, etc. Many of these subjects, which in effect form an integral part of industrial planning and implementation, have been given more attention in recent years. The United Nations and other international organizations have organized a number of conferences on some of these subjects, which have resulted in considerable documentation. This documentation should be made available to the largest possible extent, and could be used in regional and national training programmes; further material would in consequence be produced on a national level.

Notwithstanding the efforts undertaken by some national and international institutes and training programmes, it is generally felt that training, particularly in project elaboration and project analysis, lags far behind the needs of the developing countries. The implementation of any industrialization policy or programme is inconceivable without the elaboration of specific projects, and it is in this field that developing countries face the greatest difficulties. To facilitate training in project elaboration and project analysis, as well as the work of technical administrators dealing with these problems, some standardization in the methods used for project formulation and evaluation, and investment criteria in general, would be most useful.

Furthermore, in organizing training programmes, it is most desirable to bring together government officials and executives and leaders of enterprises and organizations, both private and public. As it is necessary to establish a common language between them, it is useful that persons responsible for general administration and those responsible for the preparation, execution and implementation of projects within the framework of public and private enterprises should participate together in the same training programme. The participation of executives and leaders of enterprises is all the more important since the absence or shortage of managerial talent often constitutes one of the most serious obstacles to industrial development.

Existing training facilities

There has been a rapid increase in the number of training institutes and programmes offered to persons from developing countries, both in the developing countries themselves and in highly industrialized countries. Most of the programmes have concentrated on training in the field of macro-economics. There is a deficiency in training for industrialization in general, and more particularly with regard to specific sectors and at the level of the enterprise. This does not mean that the number of existing institutes and programmes should necessarily be increased. There is need, rather, for a revision of programmes in the light of the training requirements which must be met in developing countries if those countries are to succeed in elaborating and, still more, implementing their industrial policies and programmes. Those responsible for such training programmes should be constantly concerned to evaluate their programmes in the light of existing requirements. It is realized that such evaluation is difficult to achieve. Some effort should be made, however, to establish procedures which would make it easier to determine the utility of the programmes offered, at the same time increasing their efficacy and ensuring their constant adaptation. Studies centred on the critical evaluation of implementation processes of development projects in specific countries should be undertaken by national and regional development training and research institutes, as one of the ways of meeting these needs.

The services which could usefully be rendered to existing institutes for the more adequate training of economic administrators in industrial development are twofold. First of all, there seems at present to be a general shortage of adequate teaching material and documentation in the field of industrial development. An important task could be fulfilled by certain institutions in both developed and developing countries and by international agencies in promoting the elaboration and wider circulation of such teaching material.

Secondly, assistance is needed in overcoming the shortage of qualified teachers to conduct training programmes for industrial development. Here again the institutes located in highly industrialized countries have a role to play, and aid-supplying agencies should see to it that these institutes are able to fulfil that role in the most efficient way. Such assistance by institutes in industrialized countries would in any case benefit not only those located in the developing countries or regions, but also the institutes themselves, since it would give them an opportunity of still further increasing their knowledge of the practical problems of the development process. For in any such assistance in the area of industrial development, it should not be overlooked that it is not enough to supply specialists in a given field or a specific industry or industrial sector, but that such specialists must also be aware of the ways and means of operating in the environment of a given developing country. The number of experts combining these two qualifications is still quite small, and although it may not be possible to resolve all the problems related to this question, better organization and co-ordination between the various agencies which might supply such specialists could lead to an improvement in the present situation. These tasks require full co-operation and co-ordination among international organizations, as well as regional and national training insitutions, particularly in making documentation and staff available to each other. Joint training programmes could be undertaken to reduce costs and increase benefits.

RECOMMENDATIONS

The Working Party

Recognizing the need to promote training programmes for general administrators, as well as for technical administrators dealing with industrialization in the developing countries, and with due regard to the efforts already made

Recommends that the United Nations, the Development Centre of the Organization for Economic Co-operation and Development and other international organizations should:

(*a*) sponsor, at the most appropriate levels, short seminars or meetings for senior administrators in the developing countries in development strategy and administration, with due emphasis on problems of industrial development;

(*b*) promote and undertake training programmes for the middle-level general administrator on a national and regional basis;

(*c*) initiate and organize training programmes for technical administrators in specific or specialized subjects of industrialization, e.g. market analysis, project preparation and evaluation, industrial financing;

(*d*) provide adequate financial support through their technical assistance and aid programmes, and make available to countries and institutes, for training purposes, expert assistance and documentation and teaching materials on industrialization; in particular, the establishment of industry studies and a manual for the elaboration and evaluation of projects is considered an urgent matter;

(*e*) increase their efforts towards helping development training institutes in the less advanced countries;

(*f*) give special assistance to those development training institutes in the less advanced countries which can serve as intensive pilot projects for testing and developing training material and approaches.

PART II

ISSUES AND PROBLEMS INVOLVED IN THE TRAINING OF ECONOMIC ADMINISTRATORS FOR ACCELERATED INDUSTRIALIZATION

EVALUATION OF TRAINING PROGRAMMES FOR ECONOMIC AND INDUSTRIAL ADMINISTRATORS

by the United Nations Centre for Industrial Development

A significant number of specialized training institutes in economic planning and development have now come into existence.[1] While most of them offer courses in economic planning, development economics, and selected areas of economic development, there is no comprehensive training in industrial development.[2] This gap was evident from a survey conducted by the United Nations Centre for Industrial Development in 1962, concerning the area of coverage by the various training institutes. The replies indicated that the focus in training was on problems of economic planning and that industrial development was considered in a marginal way.[3] Recently, some efforts have been made to fill this gap. The Institute of Social Studies at The Hague has started a course in industrialization. The Economic Development Institute of the International Bank for Reconstruction and Development has conducted courses on project appraisal which include, in great part, an appraisal of industrial development projects.

An attempt will be made in this paper to analyse and evaluate basic questions concerning training of government officials in industrial development. These questions are:

(*a*) Is there a need for training?
(*b*) Who should be trained?
(*c*) The areas in which the training is to be given.

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[1] Organization for Economic Co-operation and Development, Catalogue of Economic and Social Research Institutes, Paris, March 1965 (mimeographed).

[2] The African Institute for Economic Development and Planning, Dakar, recently organized a course in industrial planning for senior government officials in Cairo.

[3] "Preparation of teaching materials in economic and industrial development" (E/C.5/54).

A. The need for training

It is not necessary to submit arguments to prove that training in general is necessary. After all, the desire to acquire knowledge and to use it for human advancement is a basic motive of man, impelling him to obtain knowledge in a number of ways. There is, indeed, no end to the learning process. As to training in the context of the responsibilities entrusted to a government official, to enable him to play his due part in accelerating growth rates, this is essentially a matter of clarifying the nature of the training rather than of arguing the case for or against it. It is also a matter of emphasizing the urgency of obtaining training in a particular way.

The need for and the nature of training programmes in industrial development are rooted in the industrialization process itself, which involves a complex chain of activities, from planning for industrialization to the production of innumerable goods in industrial establishments. This process is one in which the co-operation of many institutions and the combination of many disciplines is vital. Moreover, the integration and meshing should be such as to permit the undertaking of the necessary tasks with a minimum of time and effort. The vital element in the experience of the industrially advanced countries is this, that not only has a basic system of institutions and disciplines been developed over a long period of time, but that a linkage and pattern of relationships has also been evolved, thus reducing the time and the costs involved in carrying a given project to fruition. For most developing countries, this will remain a worthy goal for some time to come, but efforts will have to be made, and in this task training will play a substantial role.

The role of training in this context is a dynamic one. It should not be construed here as capable of resolving the twin problems mentioned above, namely, the development of institutions and acquiring of basic disciplines on the one hand, and their utilization through a network of inputs and integrated relationships on the other. But it will accelerate the process by creating an awareness of the entire problem, helping the participant to assess his role in the complex chain of activity and enlarging his experience by facilitating comparison with similar experiences elsewhere. In other words, the training activity will provide him with an opportunity to come out of his groove, re-examine his own tasks and acquire greater awareness and knowledge so that he may effectively discharge his functions.

This places a special responsibility on the training programme itself. It has to be short, so that the employer may be able to spare the employee from the job; it has to be suited to his special requirements; it has to be backed by research and up-to-date data in order to provide the required knowledge and experience in a short time. It has also to be dynamic in the sense that the same course cannot be repeated, as is the practice in universities, year after year. If it is not to lose its catalytic qualities, periodic assessments and changes are necessary.

If this is the goal of training of government officials dealing with the industrialization process, then devising an adequate training programme is a formidable problem. The question, therefore, needs to be asked: who to train and in what areas should he receive training? These questions are linked and need to be clarified.

There is also a question of numbers. The formula for training may and can be found, but how many persons can benefit from it? The present experience of several international training organizations indicates that it is both a capital-intensive and a labour-intensive process. It is therefore a matter of both financial resources and availability of qualified teaching personnel and teaching material.

It is also necessary to indicate how much of this effort should be undertaken at the country level. It is interesting to note that much of this activity is undertaken by a few international organizations and by training institutions in the industrially advanced countries. What will be the role of these institutions as expanded national efforts to train personnel locally get under way? The answers to questions raised in the above paragraphs will, in all probability, provide a basis for action for several years to come.

B. Training of economic and industrial administrators

As mentioned earlier, the crucial point in training is to ascertain who should be trained. Is it then enough to describe this group as economic and industrial administrators? While this is a useful term, as compared to the rather commonplace word, "government officials", it is not enough to provide a definite basis for drawing up training programmes. Moreover, it may even shift emphasis from the main point, namely, training to assist officials to discharge certain functions concerned with industrial development quickly and effectively.

It is difficult to differentiate persons from the organizations to which they belong and organizations from the functions they are required to undertake. They appear to be identical, and at the end of the line is the person who does the job. But this is a simplified statement of the problem. Any ministry, industrial development corporation, development bank, or any sections thereof are staffed by innumerable individuals. Here, two or three broad functions may be mentioned; namely, managerial tasks, specialists' functions and administrative duties. They may be different in nature but they are not divided into watertight compartments, since there is interchange of functions. In countries such as India, civil servants change functions in very radical fashion; for instance, a financial adviser in the treasury becomes manager of a chemical factory. At a lower level, this interchange of functions is considerable.

This only serves to show that each government administration is, in many ways, tradition bound and that there are as many administrative patterns and practices as there are governments. This state of affairs will inevitably introduce certain arbitrary elements when we try to distinguish between functions and relate persons to functions. But it is possible to conceive of two approaches which are general enough to be applicable everywhere and flexible enough to be adapted to suit the specific requirements of the country. One approach relates to the outlining of specific steps involved in the industrialization process; the other relates to the person involved in the process, who has had several years in government service.

The latter may be described in a number of ways. They could be mid-career officials or second-level decision-makers, or officials in charge of certain functions, who act as managers in organizing and getting work done. Their common trait will be that they have spent a number of years in government service, most of that time preferably in handling development problems.

As a matter of fact, most of the training institutes cater to the above-mentioned groups. In this connexion, it is interesting to review the experience of a training programme in industrial planning organized by the African Institute of Planning and Development, Dakar. The letter on this subject to the African governments indicated that the training programme was intended for mid-career officials in ministries of industry and government organizations dealing with industrial development. The response from the African countries was encouraging. A study of the list of those attending the course reveals a wide variety of functions and disciplines brought to the course by the participants.[4]

C. Analysis of the process of industrial development

Any attempt to specify steps involved in the process of industrialization is bound to be a difficult, if not an impossible, task. In this paper, it is approached at two levels namely tasks to be undertaken before industries are established and tasks required after the industries start production. These two aspects may broadly be described as the planning and implementation of industrial development projects on the one hand, and the management and operation of industrial establishments on the other. The State, in accelerating the industrial development process, has in varying degrees undertaken both aspects of work. But in almost every developing country which is seriously engaged in planning, the role of government is basic to the planning and implementing of industry projects. The government creates the climate in which industries are established and operated, whatever the agency of management. It has to devise appropriate policies and a sound institutional framework to sustain rates of growth. In this area, economic and industrial administrators have a vital role ro play. This can be expressed in the schematic presentation below. This paper is primarily concerned with functions mentioned under item A.

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[4] See below, "United Nations training programme in industrial development and planning for African government officials — Appendix A" (page 121).

A considerable body of information has developed as regards planning; techniques have been evolved and special data collected to refine calculations and projections. There has developed a vast body of knowledge on various aspects of planning, including sectoral planning. Information on the latter and, in particular, on planning for the industrial sector is not as voluminous, but there is substantial interest, and a certain amount of material is available. Recently, attention has been focused on project evaluation, particularly the engineering and economic criteria of evaluation. Efforts are being made to organize special working parties to build a body of knowledge and to harness it for training purposes.[5] Courses on project evaluation are increasingly introduced into existing programmes of training institutes.[6]

The field of project implementation has been characterized as belonging to public administration. Public administration adherents refer to it as belonging to specialized departments and ministries. Thus this field of work is not explored, although it is most crucial to the planning process. Much has been said about the need for economic and industrial executives in government, but very little attention has been given to this area as compared to others.

It is hardly necessary to point out the significance and importance of this area of work. In a study undertaken by the United Nations on planning for the production of commercial fertilizers in a large South-East Asian country, it is estimated that it takes approximately twenty-four months longer than is normally necessary from the time a decision is made to establish the factory to its actual establishment. Much of the time is wasted not so much in the preparation of the project report, but in negotiations with contractors, evaluation of bids, ordering of equipment and delays in construction. The report attributes the delay to the decision-making processes in the ministries and the autonomous public corporations. Similar situations can probably be cited in other countries.

The implementation stage involves a wide range of functions such as a general assessment of the technical and economic aspects of a given project and of the legislative framework within which industries are promoted, licensing activities, foreign exchange and raw material allocations, etc. In addition, action has very often to be initiated in the establishment of central or national facilities for the promotion and overseeing of industrial development. The nature of the activity involved in these functions varies with the degree of sophistication of

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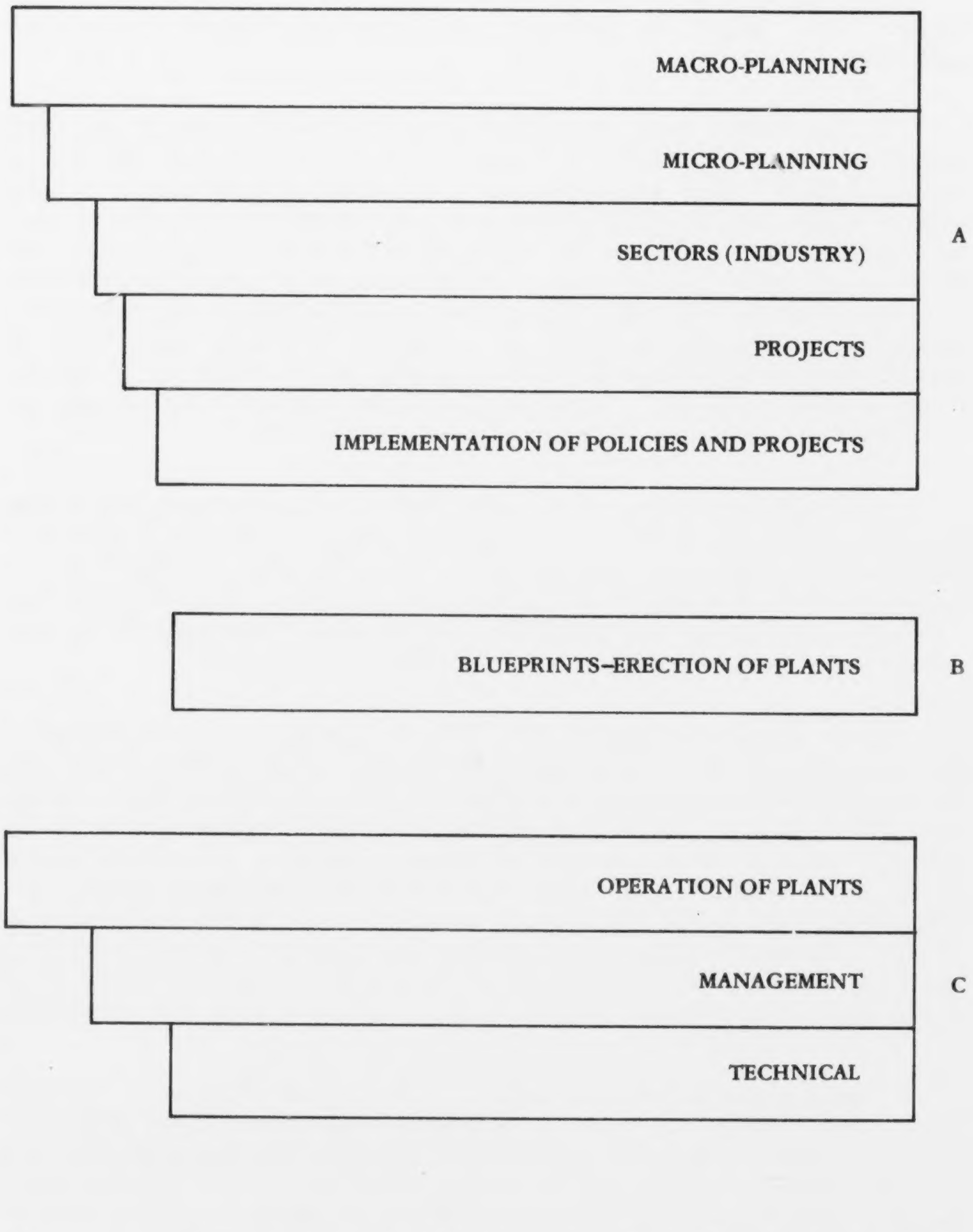
[5] The United Nations Centre for Industrial Development organized an inter-regional symposium on industrial project evaluation which was held in Prague from 11 to 29 October 1965.

[6] See Organization for Economic Co-operation and Development, Catalogue of Economic and Social Research Institutes, Paris, March 1965.


MACRO-PLANNING
MICRO-PLANNING
SECTORS (INDUSTRY)
PROJECTS
IMPLEMENTATION OF POLICIES AND PROJECTS
A
BLUEPRINTS–ERECTION OF PLANTS
B
OPERATION OF PLANTS
MANAGEMENT
TECHNICAL
C

the governmental machinery and of development efforts. Generalizations, therefore, are misleading in this area. But the question may and should be raised: how can this "smorgasbord" of activities be covered in a training programme?

If the crucial consideration is the speeding up of the actual process of the establishment of factories, the question is how economic and industrial administrators can be helped through training to make quick and speedy decisions at various administrative stages. To pinpoint any function or to equip them with any given technique is, as indicated above, a difficult task. Considerable thinking and study, therefore, are necessary to spell out the requirements of training in this area, so that adequate training programmes may be devised.

D. Nature and content of training programmes

The foregoing discussion raises the basic question whether there should be one general or several specialized training programmes. A single comprehensive specialized training programme in industrial development, as adopted for the course organized by the African Institute for Economic Development and Planning in Cairo, can be undertaken to cover very broad areas of industrial development in all its stages.[7] On the other hand, specialized courses in project evaluation, development financing and programming techniques can be organized to suit special requirements. Such courses are, in fact, conducted by the various training institutions. Although these courses are specialized, the officials who attend them are not specialists, nor do they attend in order to become specialists. Certain training facilities are available and they are taken advantage of. The problem of choice, as it exists in university courses, simply does not exist in these training programmes, where all available facilities are utilized. Since few courses are available in this field of industrial development to begin with, and the choice of one as against another is academic, the structure of the training programme is very often the choice of the training director, or of his institution, based on his observations of the need for training.

It is interesting to note that most of these training courses are given in the United States or Europe. There are a very few exceptions to this rule, such as the United Arab Republic, Venezuela, etc., where special institutions similar to those in the industrialized countries have been established. In several other countries, *ad hoc* courses are organized, but seldom on a regular and systematic basis.

It is difficult to understand why, if training programmes for economic and industrial administrators are so useful, action is not taken in the developing countries to put such programmes into effect. It is true that there are perennial problems of cost, staff and teaching materials. But the costs of organizing such programmes in developing countries are considerably less than in the industrialized countries, provided that there is plenty of teaching material and adequate staff. These need to be developed over a period of time and a beginning has to be made as soon as possible.

In regard to the nature and content of general courses on industrial planning, special reference to the Cairo course may be made here. It was, in many ways, an experiment. Unlike other courses, not much prior planning went into it except of a general nature. It might serve as a case study in determining whether such a course could be repeated elsewhere, with certain changes. First, it covered the entire process of industrial development. Secondly, emphasis was placed on visits to factories and discussions before and after the visits. Thirdly, neither the background nor the length of service of the participants was uniform. Lastly, the course was conducted with the aid of simultaneous interpretation.

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[7] See below, "United Nations training programme in industrial development and planning for African government officials" (page 111).

Details of this course may be found in the discussions which follow. From the participants' point of view, it was satisfactory, since all were practitioners, with very similar reactions. Hence the discussion that followed was always interesting. In the case of other training programmes, for example, the one organized in Caracas, Venezuela, by the Organization of American States, it was evident that a project evaluation course alone was not sufficient. A review of the entire area of implementation is needed if the exercise in project evaluation is to have any significance. As a matter of fact, some of these specialized courses make it a point to cover related work very briefly. A case can perhaps be made for a general course such as the United Nations training programme in industrial planning held in Cairo, but with rather more emphasis on individual items.

ORGANIZATION OF TRAINING PROGRAMMES IN INDUSTRIAL ECONOMIC ADMINISTRATION

*by Yap Kie Han**

A. Background and training objectives

1. *General background*

Industrialization for developing countries implies the introduction, adaptation and integration of technology — as a non-traditional element — in the economic and social structure of the country. It is a deliberate effort to create a new basis for the development of the talents and skills of the people and for the utilization of the country's natural resources. It is, inevitably, an evolutionary process requiring a balancing of reconstruction efforts in other sectors of the economy. It is also introduced with the perspective that it will generate a continuous chain of smaller and larger innovations which will give the economy a dynamic viability, which is essential for the achievement of constantly improving standards of living.

Relatively little is substantively known about the methodologies needed for developing and guiding the industrialization process of a country, although many organizations and institutions have in the last decade or so been actively engaged in a study of this subject. A body of empirical knowledge is, however, taking shape and may constitute, at a later stage, the basis for a universally acceptable theory on the methodologies and problems of industrialization. In the absence of such a theoretical foundation, no training or educational effort in this field can claim, for the time being, to be more than a selection from the aforementioned empirical body of knowledge. Short-term post-graduate training is therefore at present probably the most appropriate manner for instruction in this field. With the emergence of new nations in all continents, knowledge of industrialization is daily enriched by the experience gained through the worldwide effort represented by industrialization. Such experience may well crystallize, much sooner than expected, into a new body of knowledge, which will be of tremendous value to the developing countries in their pursuit of higher standards of living through industrialization.

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Distinct differences are discernible in the approach to industrialization in various parts of the world. In most Asian countries, for example, this approach is strongly influenced by the comparatively high ratio of population to known natural resources. Very severe trained manpower shortages are probably the most serious obstacle to the industrialization of Africa's newly emerging nations. In many Latin American countries, basic social reconstruction is a prerequisite to fully successful industrialization. These are only a few of the divergent requirements confronting industrial development administration in various countries: and the divergence becomes still more apparent upon a closer analysis of the industrial potentialities of each country and its stage of economic development. This brief survey also shows that there can be no single answer to the problem of the training of industrial economic administrators. A complex of training opportunities is required, which, on the one hand, will provide general basic instruction as well as instruction in various specialized areas and, on the other, will facilitate the interchange of experience on the national, regional and international levels. The contribution which on-the-job training and internal courses can make should also be recognized.

2. *Tasks of industrial economic administrators*

The industrial economic administrators in developing countries are faced with tasks which are generally more comprehensive than, and often very different from, those of their counterparts in industrially advanced countries. Some aspects of the difference have been illustrated in the background sketch in the previous paragraphs. The difference is also evident from a comparison of the prevailing institutional and physical infrastructures. Furthermore, in the developing countries a more directly active role—and even an "entrepreneural" one—is expected of the industrial economic administrator. His duties will in general relate to one or more of the following fields: formulation of national development objectives in the industrial field; assessment and mobilization of industrial resources; development of a suitable legal framework and industrial climate, and planning and implementation of specific programmes and projects.

Four categories of industrial economic administrators may be distinguished:

(*a*) general industrial economic administrators engaged in over-all planning, guidance and co-ordinating activities on the national level;

(*b*) sectoral industrial economic administrators, responsible for sectoral industrial development programmes within the framework of national development policies;

(*c*) regional industrial economic administrators engaged in regional industrialization efforts, also within the national economic development framework;

(*d*) administrators specialized in functional aspects of industrial development (e.g. industrial financing, promotion of industrial exports, modernization of industrial law, safety inspection, standardization, etc.); these specialized administrators are often also engaged in developing the institutional framework required for industrialization.

Within each category, obviously, a grading according to hierarchy and seniority can be further recognized. The administrators directly in charge of industrial enterprises — government-owned or privately-owned — constitute another distinct category, but are generally considered as belonging more to the group of enterprise-managers than of industrial economic administrators, who are the subject of this paper. Between these two groups — managers and industrial economic administrators — an interchange of functions may often occur and a close interrelationship may be recognized in the career patterns of the two groups.

3. *General training objectives*

An inter-disciplinary approach characterizes the work of industrial economic administrators, whose professional backgrounds may vary considerably — economics, engineering and technology, mathematics and pure sciences, administrative sciences, humanities, etc. A clear, dispassionate understanding of the contribution which each of these disciplines can make to industrialization would constitute a first target for training programmes in industrial economic administration. A focal point here is a common understanding of the nature of industrial technology — general technology rather than specific engineering specialities — and its role in the economic development process of a country and its interplay with various economic and human factors. This also implies the development of a common pragmatic outlook; a realization that all industrialization efforts, whether functional, promotional, operational or of any other nature, must ultimately come to fruition at the enterprise level, that is, with the establishment of new industries and the expansion and qualitative improvement of existing ones.

Another general objective of such training programmes would be to provide basic knowledge of skills in the management and administration of industrial programmes. Here a relationship has to be recognized with the experience already gained in the course of a person's career. From the point of view of training for industrial economic administration, it may be desirable to distinguish three levels, in order of increasing authority. A first level consists of operational positions, which are generally occupied by young graduates. Then there is an intermediate level of positions involving decision-making concerning programmes or specific operations. The last level relates to decision-making with a nationwide impact or international action of similar importance. Personal competence and experience, as well as political and other environmental factors, are predominant influences at the more senior decision-making levels, to which training can make only a very limited direct contribution. Training is, however, especially useful at an earlier stage, as a preliminary to the development of a more or less lasting pattern of analytical thinking in connexion with decision-making, a pattern which will have to mature through experience.

The effective exchange of experiences is a third objective which can be pursued in a training programme for industrial economic administrators. Such exchange may relate to experience gained in the execution of specific programmes, to special insights developed through research and experimentation, to experience gained from projects undertaken in different institutional environments and/or to different professional views on particular subjects. Such exchanges would contribute to a broadening of the perception and basic understanding of the persons concerned in regard to the manifold aspects of industrialization.

4. *Need for training in industrial economic administration*

Three possible types of training courses would correspond to the career pattern described above: a general basic course for young graduates, a career development course for persons eligible for intermediate posts and an advanced course for those still at intermediate level, but eligible for most senior functions. The results expected from these courses are: development of career officers in the field of industrial economic administration; accelerated training of specialized programme administrators, and retraining in the field of industrial development of officials from other sectors of government or from other occupations.

The needs for such training will vary from country to country and will within each country vary with time. The situation may, in many countries, further be influenced by the severe shortage of qualified candidates. Lack of accurate data make detailed forecasting very difficult. Nevertheless, it would be useful to derive some quantitative indication of these training needs, based on United Nations endeavours to accelerate economic growth and industrialization in developing countries.

According to United Nations estimates, industrial employment in the developing countries by 1975 may total over 100 million persons. This will correspondingly require several million managerial, engineering, technical and other staff on the enterprise level. To stimulate and support this development it can, in turn, be safely assumed that at least several of tens of thousands of qualified persons will be required for various functions in the field of industrial economic administration. These data, however crude, justify the development of special training efforts in this field.

B. Content of training programmes

The content of a particular training programme in industrial economic administration will have to be related to the specific training objectives pursued. Such an analysis will determine the level, emphasis and extent of the treatment of the various subjects.

Four major elements can, however, be generally distinguished and are discussed in this section. These elements are: general industrial planning, industrial programmes, project planning and implementation and, fourthly, industrial development administration and organization.

1. *Industrial planning: general*

(a) *Development policy.* Industrial planning must constitute a part of the planning process for general economic development, and industrial economic administrators must therefore be informed about and have an understanding of this general planning process. That process is largely determined by the aims of development policy on the one hand, and, on the other hand, by the scarcity of some important factors of production.

Among the aims of a development policy, raising the national income is the most important. The target here is determined by two considerations: to raise the *per capita* income and thus reduce the gap in living standards between rich and poor countries; and to meet the challenge of the population explosion. The position with regard to the latter has changed considerably during the last two decades and presses for ambitious solutions. With a 4 per cent rise in *per capita* income, which is moderate in the light of the low absolute levels of income in developing countries, and a rate of population growth of 3 per cent, a target of 7 per cent *per annum* is obtained. Although some variation is conceivable, this figure will often constitute the figure to strive for.

Another aim must be the expansion of employment. With disguised unemployment already widespread, the population explosion and urbanization will probably add considerably to the problem of unemployment and deliberate measures to reduce it must therefore be designed. There is some connexion between the two aims: the higher the national growth rate aimed at, the higher also will be the contribution to employment.

A third aim of development policy may be seen in a less unequal income distribution between social groups and regions. In the early phases of development this will not be an easy matter, since it will require sacrifices which initially the country cannot easily afford.

Since essentially an economy's production is the outcome of the co-operation of its factors of production — land, labour and capital — the attainment of the aims of development policy will be handicapped by the scarcity of some of these factors. Skilled and qualified labour as well as capital are usually in short supply, while land and unskilled labour are not. For an open economy — that is, one maintaining trade relations with other countries — we may add foreign exchange as a scarce commodity, since this represents access to the factors of production of other countries, especially those factors which are scarce in the country considered.

The main problem of a developing country may thus be seen to be how to obtain maximum results in terms of its aims with the restricted quantities of scarce factors of production at its disposal.

(b) *The macro-phase of planning.* A developing economy is a complex phenomenon and the problem of how best to develop it involves a large number of variables. The solution of this problem can hardly be reached in a single process; it is better to deal with it in a number of successive steps. It has become customary to consider first the interactions between the main characteristics of the economy, often described as its macro-economic aspects. The economy is described by such aggregates as national income, total investments, total consumption, total imports and total exports, with possible subdivisions of investment and consumption into public and private sectors. To this list might be added some "stock concepts" as distinct from the "flow concepts" already enumerated; for instance, total capital or the size of the government debt.

The general objective of the macro-phase of planning is to put before the government alternatives with regard to the main aims and instruments of development policy. Among the latter, the volume of investment and, concomitantly, the education effort rank highly. Very crude ratios and time lags taken from experience are used to show that a higher rate of growth, itself desirable, requires a higher level of investment and hence leaves less for consumption in the immediate future, a prospect which is unattractive. The government must weigh the advantages and disadvantages connected with each conceivable rate of growth and decide which one to choose. This decision determines the rate of growth of the economy aimed at as a whole and constitutes a most important datum for market analyses of all kinds and in all branches. With increasing international co-operation among planning agencies, and increasing action in this field by international agencies such as the United Nations and its regional commissions, a network of interrelated figures also becomes available for expert market analysis.

The so-called capital output ratio is mainly used in this context, representing the ratio between total investments made in any country and the ensuing increase in net output of that economy. For figures referring to one year as the time unit used, the ratio is of the order of four.

The main lag involved is from the time an investment has been made until its fruits become available; for a national economy as a whole, a lag of three years may be a fair estimate. Both figures show considerable variations, however, depending to some extent on the sectoral composition of the economy.

(c) *The sector phase of development planning.* The next step in development planning is to break down the increase in national product into sectoral figures. This clearly involves a choice of the sectors to be developed, and therefore requires a series of what are often called pre-project studies. The problem is best viewed in the light of the concepts of national as against international sectors. By definition, the products of the former cannot be imported or exported, their transportation costs being prohibitive. Important examples are construction, the operation of buildings, electricity, transportation, government and private services, retail trade and part of wholesale trade and education. In total, they represent one half of the national product. The relevance of the concept is that national sectors must be expanded *pari passu* with the home demand (determined largely by the growth of national income), whereas such a necessity does not exist for international sectors. There, the relative advantages in international competition are the criterion. The sectors which do best in international competition are the ones which will make the best contribution to the national product.

Here, a long-term view should be taken; that is, the well-known fact should be taken into account that every industry, in its early years of development, has its "childhood diseases" and will attain a better level of efficiency only after some five years have elapsed. This development should be estimated, which is not easy.

Countries characterized by capital scarcity should concentrate as much as possible on labour intensive industries; this will at the same time contribute to the aim of the creation of employment. This choice may imply a preference for industries producing finished products —whether consumer or investment goods —since these as a rule use more labour than industries processing natural products. There is a fundamental dilemma here: the relative abundance of natural products in developing countries seems to constitute an argument in favour of such processing industries exporting their products; whereas industries producing finished products are usually import-replacing industries. Other factors to be considered are transportation costs, the possibility of protecting the market for import-replacing industries and the size of such a market in relation to the optimum size of an enterprise. With so many contrasting effects, only careful calculation can lead to a correct decision.

If the balance of payments shows a serious deficit, with imports exceeding exports, then there is a disproportion between the national and international sectors, to the disadvantage of the latter. Expansion of the production of international goods is then called for, the criteria being the contribution which such expansion can make to the rectification of the balance of payments. This contribution can be described as the gross output value of international (or tradable) goods minus the necessary input of international goods, direct and indirect.

To the extent that some national goods are also scarce —e.g. electricity — the expansion of any international sector cannot be effected in isolation, but has to be undertaken concomitantly with an expansion of some national sectors. The semi-input-output method is available to estimate the necessary complementary expansion of national sectors.

(d) *Role of regional targets.* The choice of sectors may be influenced by the presence of development targets for the various regions of a country which formerly depended on its own potentialities to contribute to the national product. There is at present a tendency to assist less promising regions in their development, particularly if for cultural reasons the migration of their population to more promising regions is difficult. Such a policy may imply the choice of second-best sectors, if the latter can be operated in the less promising regions. In most countries there is not yet a systematic regional policy; but some pressure is exerted to arrive at one. A beginning can be made by the collection of data on the actual situation in the various regions on the possibilities of creating incentives for migration and on the potentialities (even if only second-best) of the various regions. Some methods for a more systematic allocation of investments to sectors and regions simultaneously have recently been elaborated. Some simple examples will be inserted.

(e) *Functions of project appraisal.* The next step —and a very important one —in development planning consists of the appraisal of single projects. For the practical implementation of any development policy this step is a necessity; the natural unit for the execution of investment plans is the single project. Only big projects, however, can be dealt with individually. Investments made by thousands of farmers may have to be lumped together into "quasi-projects"; and so may the reactions to be expected from some central measures —say the subvention of the use of fertilizer.

The appraisal of individual projects first of all is needed in case permissions have to be granted, for instance for allocations of foreign exchange or to put up a building, or to apply for tax facilities.

The appraisal of projects also constitutes a source of information in addition to the sector analyses so far discussed. While on the one hand projects may be seen as a means of "filling up" a sector expansion programme they may, on the other hand, be a check on the preliminary information of the pre-project studies and contribute to new insights on the question in which direction a country's economy has to move.

The same project may appear in a different light to the private investor and to the nation's planners. Some projects may be attractive to the private investor and unattractive to the nation as a whole, because of repercussions on other enterprises or even industries. Thus, a railway project through a river valley may be attractive in itself but fatal to the shipping industry. While a project will be carried out by a private firm only if it promises profit, the criterion to be used by the government must be based on the aims of development and the scarcities of the factors of production involved as set out in (a) above. A clear distinction between the two ways of appraising a project should be made.

2. *Industrial programmes*

(a) *Creation of the industrial development climate.* As industry is a new and non-traditional sector in the structure of developing countries, systematic and persistent efforts have to be made to develop a general climate conducive to industrialization. This should preferably be recognized as a separate programme, involving, in the first place, a modernization of the legal and fiscal structures, i.e., the creation of new industrial laws commensurate with long-term national development aims, and in many developing countries also revision of outdated industrial laws and regulations inherited from pre-independence days. In this legal modernization process, a simplification of administrative government procedures is very often a major target..

Secondly, there must be clear recognition of the connexion between the tasks of enterprise management and of general administration at the government level. The necessity for such harmonization has been discussed above. Too often, an atmosphere of grave mutual suspicion and distrust prevails among all parties concerned, indicating that a more rational redistribution of initiatives is needed.

The industrial development climate is, thirdly, related to a consistent long-term policy of stimulating the achievement of key development targets established under the general industrialization plan. International aspects may play an important role in the determination of such a long-term policy of encouragement to industry, particularly as industrial know-how, and also capital investments from foreign countries, are generally needed.

Personal leadership characteristics on the part of industrial economic administrators —sincerity, dedication and competence, for example —are of course decisive factors in the creation of a favourable industrial climate. Good training can be invaluable in this respect.

(b) *Exploration of resources and infrastructure development.* Knowledge of the available natural resources is a basic prerequisite to all planning of industrial projects. It is a continuous process of reviewing known deposits, assessment of their possibilities, guiding their rate of utilization and exploring new resources. It involves also the development of infrastructure facilities, such as power, transport, etc., in a manner most conducive to the country's industrial and economic growth. This infrastructure development is in most cases also a prerequisite for the utilization of natural deposits, as they are very often found in relatively barren and less inhabited areas. Co-ordination is further required with external resources available to the country. A country with abundant hydroelectric power can, for example, consider the possibility of developing a basic aluminium industry, provided that supplies of bauxite can be ensured from nearby countries on a long-term, low-cost basis, and that it is in a position to market its refinery products.

Natural resources are coming increasingly to be regarded as national property, in whose exploration and utilization government should take at least a guiding interest. To an even greater extent, infrastructure development is recognized as a public responsibility. In all such development, heavy capital expenditures are involved. It should also be related to a sound industrial location policy, through which a balanced regional dispersion of industries can be stimulated.

(c) *Mining and conservation of resources.* Guiding the utilization of mineral resources in accordance with national industrial development policies means for many newly independent countries a basic departure from their previous economic structure and trade relations. It involves a change towards a larger utilization of mineral resources by locally based industries. As the external economies of many developing countries rely heavily on earnings from sales of raw materials, such a change-over should preferably be a gradual one. Mineral deposits, however rich, are limited in quantity. Except when natural accretion is possible (e.g. salt fields), the utilization of natural deposits inevitably involves their depletion after a number of years. It is therefore necessary to establish desired utilization rates and conservation policies. In connexion with the latter, the possibilities for up-grading the utilization process and recovery of waste should be taken into consideration. This calls for the adoption of modern, often highly mechanized processes. Notwithstanding unemployment problems in developing countries, such mechanization may also be desirable from a social point of view, as mining has often to be undertaken under conditions which are humanly undesirable.

(d) *Role of heavy industry.* Heavy industry has a triple function: to contribute to the further processing of a country's minerals and other basic materials into semi-finished products and intermediate goods; to strengthen the industrial structure by ensuring an adequate supply of such semi-finished products from imported raw materials, and to produce capital equipment (machinery, plant installations, ships and other heavy transport equipment).

Development of heavy industry requires a relatively large input of factors of production, which in developing countries are usually very scarce. A premature or over-extensive involvement in heavy industry may cause unnecessary burdens on the whole economy. Careful consideration is therefore needed of the feasibility and size of projects, and of their expected overall contribution to the national economy.

Technologically and financially, the development of heavy industry generally requires substantial foreign assistance. To facilitate the diffusion of know-how, the United Nations and its affiliated organizations have made some comparative technical economical studies of selected heavy industry processes, such as steel making, fertilizers, petrochemicals, etc. For financial assistance, bilateral as well as multilateral facilities are available, as well as those of the International Bank for Reconstruction and Development.

(e) *Role of light industry.* Light industry is predominantly oriented towards consumer goods. It can play an important part in the transition from an agricultural to an industrial economy by processing agricultural raw materials, e.g. fruit-canning, vegetable preservation, edible oil processing, etc. It can also contribute to a better utilization of agricultural raw materials and by-products, such as strawboard manufacture, fibre processing, etc. These industries make a higher economic yield possible in the agricultural products sector.

Textiles and apparel products are another sector of light industry geared to the primary needs of a developing economy. Its relationship to the agricultural products sector is recognizable, although synthetic materials have been increasingly utilized in recent decades.

Durable consumer goods —of metals, plastics, or other materials —are another group of products fabricated in light industry enterprises. The process involves a combination of component manufacture, sub-assembly and final assembly. As industrialization progresses, a further specialization of the industrial structure according to these three processes is recognizable.

Light industry also contributes to the development of various industrial services, such as printing, repair and maintenance, etc., which acquire a clearly industrial character as higher levels of technological advancement are reached.

From this sketch of the functions which it can perform in the national economy, it is clear that light industry can serve as a catalyst for industrialization and as a training ground for industrial leadership. No strict rules have to be observed regarding economy of scale, and industrialization may be initiated under the most elementary conditions. Moreover, there can be substantial adaptability to a country's labour situation, and capital investment requirements may be reduced to a minimum.

3. *Project planning and implementation*

(a) *Formulation of projects.* For the realization of the objectives pursued by the above-mentioned industrial development programmes, specific projects will have to be formulated, designed and executed. This is a process of which industrial economic administrators should have intimate first-hand knowledge and experience.

The first step in the formulation stage is the selection of the project. It requires a specific initiative and a reconnaissance of the scope to be covered by the project in the context of the various industrial development programmes (see section 2 above). This preliminary appraisal should result in a tentative outline, including a description of the terms of reference on which a feasibility study can be based.

The feasibility study aims at determining whether a project can be implemented and the best possible or alternative courses of action. To this end, a comprehensive and detailed analysis of all relevant aspects is necessary.

For industrial projects, an analysis of the market situation will constitute a basic element in the feasibility study. In developing countries, it also often involves a detailed appraisal of external trade factors, such as export promotion and import substitution.

Choice of technology, adaptation of products and processes to locally prevailing conditions and availability of supplies of material are specific elements which in developing countries require special consideration in the analysis of technological factors. Foreign exchange limitations also make it often imperative to distinguish in the specifications of plant equipment between locally available and imported machinery. Maintenance requirements are also of critical importance.

The feasibility study must also involve a detailed appraisal of the personnel financing and organizational aspects. As we mentioned above, when heavy capital investments are required, plant size and scale of operations are the most critical factors, closely related with marketing and technological aspects. The feasibility study should further determine plant location, or the suitability of given locations. A detailed outline for project implementation, or alternative courses of action, should also be included.

From a financial point of view — apart from the domestic and foreign currency components — the feasibility study has to result in detailed estimates of capital budgets required, expected returns and a cash flow forecast.

(b) *Detail planning and implementation.* The feasibility study will have revealed a number of basic technical data regarding suitability of materials, possible technological processes, specifications of product programmes and other factors in an evaluation of the merits of a project. After a decision on implementation has been reached, further detail planning and project engineering is necessary.

This detail planning and project engineering includes a detailed selection and specification of equipment; design of plant lay-out and buildings, and provision of required utility services. It further involves the inviting of tenders, screening of offers and planning and supervision of plant construction by contractors and sub-contractors, as well as training of key personnel and assistance in the launching of production. Parallel with these technical steps, there must be a detailed scheduling of investments and expenditures.

(c) *Provision for future project expansion.* Possibilities for future expansion should be incorporated in the over-all plan and design of the project, indicating the longer-term perspectives and potential of the project. In many respects, these provisions affect the immediate decisions at hand, such as acquisition of land site, utility services, etc.

Factors which are imponderable at the moment of the feasibility study very often decisively influence the project. It is therefore desirable to design the project in such a manner that a start can be made with the part from which direct tangible benefits can be expected, while recognizing and keeping a watchful eye on the potential for future project expansion. This applies, for example, to the petroleum industry, where, in addition to the possible immediate demand for oil products, the possibilities should also be considered which modern petrochemistry offers for a future expansion of the heavy as well as light industry sectors.

4. *Industrial administration and organization*

(a) *General organization of industrial development efforts.* The major objective of organization is to create appropriate relationships facilitating effective co-operative action by all persons, institutions, agencies and bodies involved in the industrialization process. In this connexion, four major functions have previously been distinguished in the field of industrial economic administration. Organization includes the determination of specific functions and responsibilities and the establishment of procedures for communication and co-ordination. A simple and clearly recognizable pattern of organization is desirable and will facilitate the fostering of a favourable industrial climate.

A country's size and level of industrial advancement will largely determine the degree of centralization and decentralization to be adopted. Such decisions are also dependent upon the national structure of public functions and the degree of government initiative in the development and undertaking of industrial operations. In all circumstances, however, it is desirable to separate general administrative functions from the executive management functions of the industrial enterprises themselves. The latter should, therefore, whether they are under State or private ownership, have an economically justified performance. At the same time, the general administrative apparatus should, economically, also be in proportion to the total industrial complex.

(b) *Introduction and development of industrial technology.* Technologically, the industrial development administrator is faced with the choice of establishing the most suitable technology, its adaptation, the training of specialists who can utilize and further expand such technological know-how and the stimulation of technological research. If the administrator has an economic background, close co-operation with technologically oriented colleagues is necessary. The problem also has important economic and social dimensions to which various references have already been made.

The utilization of natural gas, which is available in many developing countries, may serve as a further illustration. Depending upon the chemical composition, size of deposit, market requirements and other factors, natural gas resources can be utilized as fuel for domestic and industrial purposes or as basic materials for nitrogenous fertilizer production. The importance of relationship with other sectors, such as energy supply and agricultural development, is clearly recognizable. The basic strategy for the development of natural gas therefore often involves an evaluation of technological, economic and social aspects at the highest administrative levels.

(c) *Training and personnel development.* An acute shortage of trained and experienced personnel is experienced in practically all developing countries. In certain countries, a considerable number of educated persons are available, but lacking, however, the qualification, motivation, training and/or experience to make them useful for the industrialization process. In many countries, general education must be considered simultaneously with, or preferably preceding industrial training. Industrial economic administrators are therefore faced with a basic task in the field of training and personnel development, namely, the provision in the shorter as well as in the longer term of qualified personnel at all levels in adequate numbers and at the right time. Nothing short of a total manpower development programme — to which a very high priority is given nationally as well as in the context of international assistance programmes — can resolve this acute problem.

(d) *Development of industrial distribution and marketing structures.* Industrialization leads to the creation of an intricate network of production units, which cannot function properly without a corresponding development in distribution and marketing structures. The efficacy of the manufacturing and distribution structure as a whole is in turn dependent upon the development of transport and other sectors of the infrastructure. Excessive transport costs often impede expansion of sales and consequently production increases. An equally important factor is the modernization of commercial concepts. For industrialization, the traditional commercial principle of large profits on single products must give way to the modern concept of multiple small returns on a large number of similar industrial products. Only through such a diffusion of the results of industrial technology for the benefit of all can industrialization succeed.

A similar change-over is required in many other traditional commercial practices. For instance, the aim should be a reduction of stocks and promotion of an optimum flow of goods from manufacturing unit to customer rather than hoarding and speculation on scarcity. Some traditional concepts of solidity and quality also require change, as exemplified in the introduction of "throw-away-after-use" containers and other disposable articles. This example also shows that the public at large, as well as the commercial and industrial circles, must be involved in the process of change, which will develop at an ever-increasing rate once industrialization has been launched.

(e) *Development of industrial financing and credit facilities.* Scarcity of capital — both domestic and foreign — is a most serious obstacle to the industrialization of developing countries. Much attention has already been devoted to the possibilities of raising capital by the mobilization of domestic savings and by appropriate fiscal and other public measures, etc. To overcome the scarcity of foreign exchange, a number of bilateral, multilateral and international aid measures have been developed. These efforts are aimed at developing within a given country the institutional financial framework which will support the needs of industrialization in a manner departing from traditional practices. In this connexion, the concept of long-term industrial financing is the most important. It relates to the institution of credit facilities for periods which are a multiple of the duration for commercial credit. Reasonable interest rates are further required which do not make the use of such long-term credits prohibitive. Another factor is the development of the security market in countries with a free or mixed economy to which industrial enterprises can turn for risk-bearing and other forms of long-term capital.

(f) *Functional co-ordination of industrial development efforts.* Technological, manpower, marketing and financial development are important tools through which industrial economic administrators can stimulate as well as co-ordinate and guide the industrialization process. A number of sub-areas can be further distinguished, such as stimulation of quality, regulation of cost factors and prices, promotion of safety and productivity, legislative recognition of industrial ownership and patent rights, etc. In industrially advanced countries, all these factors have become a part of the accepted environment of industrial institutions. In developing countries, their gradual fostering, sometimes preceding, sometimes following the progress of industrialization itself, constitutes another major task for industrial economic administrators, who must guide such development in the light of the organizational relationships of the moment, and with a view to achieving the best practical and tangible results from industrialization for the economic advancement of the country as a whole.

C. Development and training facilities

1. *Possible courses of action*

To meet the requirements of developing countries for trained personnel in the field of industrial economic administration, several courses of action may be pursued. In the first place, greater emphasis may be placed than hitherto on the establishment of training programmes within industrial development organizations themselves. Such internal training may help to relieve the shortage of trained personnel and to promote long-term personnel development.

The possibility should further be considered of strengthening and improving the various course activities offered by training institutes at the national, regional and international levels. In many instances, training in industrial economic administration is currently undertaken as a major field within the context of a general economic development course. Certain other courses are of a specialized nature, e.g. appraisal of industrial projects. A number of enterprise management courses also include general industrial development. Such courses can be useful if they set the right training standards. As they are differently oriented, the desired depth in disciplinary thinking on industrialization is usually not achieved. The institution of new training programmes fully specialized in industrialization should therefore also be considered. For these industrialization courses, the description of general training objectives and of contents of training programmes mentioned above may serve as a possible outline.

2. *Internal training programmes at industrial development organizations*

Internal training programmes can contribute directly to meeting the training needs of many industrial development organizations. The following training aims could be pursued: on-the-job training in specific tasks; counterpart training by foreign experts temporarily assisting the organization; induction-training of new officers; introduction of new knowledge and techniques and other types of refresher training. Such internal training programmes are applicable to large as well as to smaller organizations. Training methods, programmes and duration have to be adapted to the specific conditions of the organization concerned. At a large organization, such training may take the form of regular courses, conducted on a full-time or part-time basis. For smaller organizations, a part-time programme with emphasis on on-the-job training is probably preferable.

The responsibility for on-the-job training lies mostly with the immediate superiors of the persons concerned. It involves a careful assignment of tasks, explanation of specific task know-how, correction and guidance during the execution. By providing the trainee with a sufficient variety of tasks, the programme will give him an opportunity to acquire the necessary knowledge and experience for his job. Individual abilities, educational background and experience will, of course, be additional factors in determining the duration and success of the training.

A similar method is applicable to on-the-job training by foreign experts for training their counterparts. Such counterpart training has long been regarded as an essential element in the tasks of foreign experts assigned to developing countries under various international assistance programmes. It has met with varying degrees of success, and a more systematic and aggressive approach to this subject would be desirable.

Internal training programmes may also aim at induction-training of new officers, in order to inform such officers of the basic concepts and policies of the organization and to give them an over-all picture of its activities. Such programmes may also include training in certain skills, techniques and procedures which are of special importance to the organization.

Industry's progress is based on a continuous process of innovation, which should be of concern not only to enterprise-level managers and research workers, but also to industrial economic administrators. The study of new developments is therefore an essential element in the approach of the industrial economic administrator to his task. In this respect, internal training activities can be of great help.

For the development of internal training programmes along one or more of the above lines, the availability of a good master scheme and an effective programme leader are essential prerequisites. In large organizations, the function of the training officer may be recognized as a separate function. Very often, it will constitute a part-time responsibility for a senior officer. At institutions supported by a team of foreign experts, this will be a major responsibility of the team-leader, who will have to co-ordinate the counterpart training of all his experts in the most effective manner. In this connexion, it may be noted that several hundreds of United Nations experts[1] are active in the industrial field and constitute an important manpower potential for initiating internal training programmes at key institutes in various countries all over the world.

3. *Training at the national and intra-regional levels*

In various developing countries, conscientious efforts are already made in training industrial economic administrators. Such training at present takes a predominant place as a specialized study within the framework of a wide economic development training programme. Courses of a more specialized nature, such as project appraisal, are also undertaken. Furthermore, the United Nations recently completed a first training course in industrial planning for African government officials (Cairo, February-May 1965). At the headquarters of the Economic Commission for Latin America and the Economic Commission for Asia and the Far East, regional economic and social programming courses are undertaken in which industrial development is included as a major subject. These courses belong to the category of basic and career development courses for persons at the junior and intermediate levels as described above. The gradual establishment of such training courses would be desirable in all countries with a large population and in sub-regions covering a group of (preferably neighbouring) countries with a common language and with an industrial employment of some one million persons or more.

Circumstances within the countries or sub-regions concerned will determine whether industrial development training should be undertaken in a comprehensive manner within a special industrial development training organization, offering, in addition to basic and career development courses, various specialized courses, for instance, on certain branches of industry, small industry development and other related fields, or as an activity affiliated with a general economic development training institute, or again as a programme of complementary courses offered by various institutions in the area concerned.

Important contributions can and are being made by various international assistance programmes in establishing national and inter-regional training institutes. Nevertheless, to meet the existing need, still greater efforts are needed. Such expanded efforts should aim at strengthening and improving existing training facilities, in particular at raising their practical efficacy. The establishment of sound curriculum standards, the supply of worth-while teaching materials and the development of a good faculty are key areas to which international assistance programmes can contribute. The need for quantitative expansion has been shown above. It constitutes a second major objective for international assistance in this field. It may, however, be desirable to establish training institutes on a permanent basis only when adequate standards can be ensured. To meet the pressing needs for trained personnel, various temporary measures might be considered, such as training on an *ad hoc* basis.

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[1] According to the reports of the fifth session of the United Nations Committee for Industrial Development, 230 experts were engaged in 1964 in the industrial field under the various United Nations technical assistance programmes, excluding Special Fund projects. (See *Official Records of the Economic and Social Council, Thirty-ninth Session, Supplement No. 6,* para. 125).

4. *Inter-regional training*

The following specific training objectives can be recognized in this area: refresher training (orientation on new development) and study of advanced techniques, e.g. market study and inter-industry analysis, and preferably also actual experience in the application of these techniques. Such practical application during the period of training cannot generally be aimed at developing complete proficiency in these techniques. A detailed involvement by the trainee in their application is, however, in many respects valuable from a training point of view and indispensable in determining the correct manner of analysis, evaluation and insight into the problems under study.

Inter-regional training should preferably be aimed at persons at the intermediate and advanced levels. This would include the career development and advanced courses mentioned above as well as the organization of various short seminars and participation in research projects. A great variety of opportunities are already being offered in the industrially advanced countries and useful contributions are made. It should, however, be recognized that this is a relatively new field, requiring much further development. In certain instances, nostalgic memories of bygone eras still dominate the basic philosophy of the course programmes. Shortage of competent teaching staff is another basic difficulty. In this connexion, it should be recognized that effective instruction requires both expert knowledge in a specialized field of learning and a profound understanding of the conditions and development problems in the newly emerging nations. New methods of instruction and new approaches to training programmes are another field for possible improvements. It is in this connexion most encouraging that these methodological aspects have the attention of the United Nations, its specialized agencies and other international organizations. For practical reasons, there is a generally growing recognition that inter-regional training for persons from developing countries should be limited to fairly short periods of not more than a few months. Costs for inter-regional training are estimated to be 50 per cent higher, or even more, than for intra-regional training. A good knowledge of the home country's requirements and a sufficiently senior position are needed if full benefit is to be obtained from such training. This in turn implies that only much needed personnel can qualify, posing further limitations on the duration of inter-regional training.

5. *Methodology and general training standards*

Specialized industrial development courses require a more thorough study of the subject than can normally be undertaken in a more general course. Three types of industrial development courses have already been described above: a general basic course for young graduates, a career development course for persons eligible to intermediate posts and an advanced course for persons still at the intermediate level but eligible for the most senior functions.

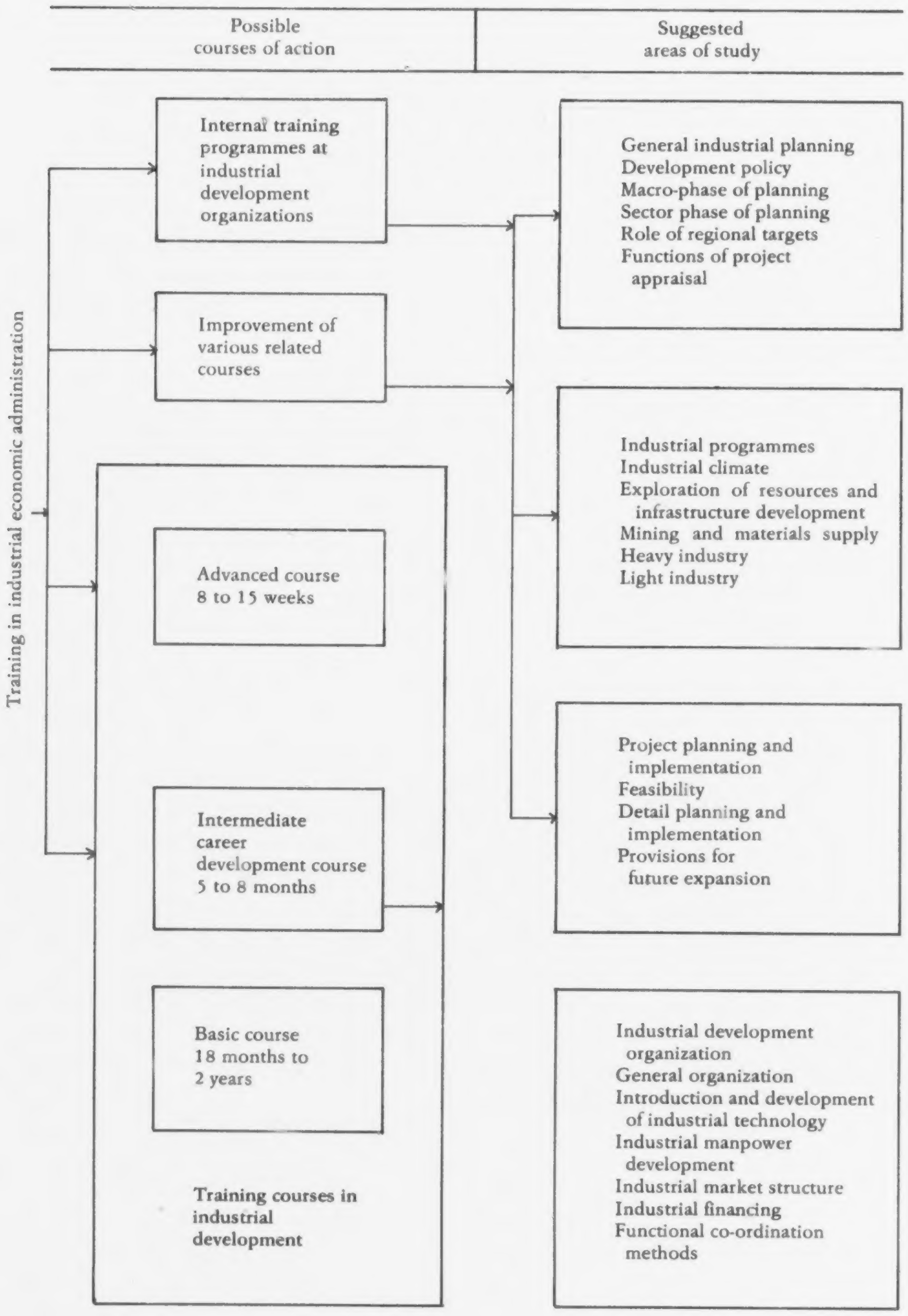
The basic course is intended for graduates in the 22 to 30 year age group who have completed at least three to four years' academic education. The required duration is between eighteen months and two years, and includes preliminary instruction to develop the required inter-disciplinary approach; for instance, several months' technological training for non-engineers and similar economic basic requirements, to be included during the early part of the training. It may also be extended in stages throughout the whole course. The total duration of the practical work must be at least six to nine months. The basic course should further give trainees a general insight into the various subjects described in section B, and proficiency in one of the major fields. This may be achieved, for example, by devoting the latter part of the course to the specialized study of subjects in which course participants can "major". In view of the intensity and duration of this basic training, participants who have successfully completed such courses might be given a recognized certificate of professional qualification.

For career development courses to prepare officers in the 28 to 35 year age group for intermediate positions, the training may be of shorter duration; say five to eight months. These courses should basically aim at developing full proficiency in major fields of specialization, e.g. general industrial planning on the national and regional levels, certain industrial sector programmes or functional specializations such as financing, industrial manpower development, etc. Practical field training should, in this type of training, be related to the analysis of complex problems and a broadening of specific career experiences.

Advanced courses preparing candidates for the highest executive posts should aim at "de-specializing" participants, in contrast to the career development courses which provide specialized training. "De-specialization" can be achieved by confronting the participants with a selected cross-section of experiences from all major fields as described in section B. Such courses aim further at providing detailed insights into decision-making processes at high levels. The programme should also provide for a detailed study of development strategies and international industrial relations and for personality development to prepare participants for leadership responsibilities at top-level positions. A duration of eight to twelve weeks is generally considered necessary to create a lasting training impact. Such advanced training is generally limited to selected candidates in the 32 to 40 year age group, possessing high personality, professional and administrative qualifications, and who have adequate experience and a record of notable accomplishment.

APPENDIX A

Development of training in industrial economic administration


Possible courses of action
Suggested areas of study
Training in industrial economic administration
Internal training programmes at industrial development organizations
Improvement of various related courses
Advanced course 8 to 15 weeks
Intermediate career development course 5 to 8 months
Basic course 18 months to 2 years
Training courses in industrial development
General industrial planning
Development policy
Macro-phase of planning
Sector phase of planning
Role of regional targets
Functions of project appraisal
Industrial programmes
Industrial climate
Exploration of resources and infrastructure development
Mining and materials supply
Heavy industry
Light industry
Project planning and implementation
Feasibility
Detail planning and implementation
Provisions for future expansion
Industrial development organization
General organization
Introduction and development of industrial technology
Industrial manpower development
Industrial market structure
Industrial financing
Functional co-ordination methods

Some selected industrial development training courses by the United Nations and its affiliated organizations

1. *General*

A considerable number of short-term seminars in the industrial field have been undertaken by the United Nations and its specialized agencies since, and even preceding, the establishment of the United Nations Committee for Industrial Development in 1961. These seminars deal with general subjects, as at a two weeks' seminar on industrial development programming in the Latin American region, as well as with a variety of more specialized subjects, such as industrial estates, fertilizer production, iron and steel industry, food canning, industrial standardization, employment problems related to automation and advanced technology, etc. The United Nations also offers fellowships for individual studies, for participation in various in-service training programmes or in courses sponsored by various institutions. Efforts have further been made to provide more basic and longer-term training facilities, which will be especially considered in more detail. These training activities comprise regional efforts, such as the special training course for African government officials in industrial planning, and the study of industrial problems within the context of economic development courses organized under the auspices of the regional economic commissions for Latin America and for Asia and the Far East. Furthermore, the International Bank for Reconstruction and Development sponsors a course on industrial project evaluation.

2. *Training course for African government officials in industrial planning* [a]

(a) *Organization.* Training course organized by the United Nations Centre for Industrial Development, in co-operation with the African Institute for Economic Development and Planning (IDEP) in Dakar, Senegal and the Institute of National Planning in Cairo, United Arab Republic. The United Arab Republic provided host facilities for this course, which took place from 15 February to 15 May 1965.

(b) *Purpose and participants.* The course was designed to assist officials in the ministries and semi-government organizations of the African countries in dealing with various aspects of planning for, and implementation of, industrial development projects.

(c) *Course programme.* The programme was in three parts. The introductory part was devoted to problems dealing with economic planning, growth problems and selected disciplines which might be needed to prepare trainees to participate fully in, and to benefit from the course. The main part of the programme was concerned with industrial programming and, in particular, with problems of project formulation, appraisal and implementation. Attention was given to the institutional framework in which industrial development projects are promoted and implemented. While financing of projects was dealt with in general, attention was given, in particular, to foreign assistance and sources of aid. The third part dealt with problems of African industrial development of interest to the participants, such as country studies, regional integration and co-ordination, planning of industrial complexes, and work of the Economic Commission for Africa. This programme was supplemented by field visits to various industrial and economic development projects and to industrial complexes in the United Arab Republic.

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[a] See page 111.

3. *Latin American training course on economic and social planning*

(a) *Organization.* The course is organized annually for eight months (April to November) by the Instituto Latino-americano de Planificación Económica y Social, United Nations Economic Commission for Latin America, Santiago, Chile.

(b) *Purpose and participants.* Basic training is offered in the field of economic and social planning for participants sponsored by the governments of countries in the Latin American region.

(c) *General course programme.* The course is in two parts of four months each. The first part is common to all participants and covers the following subjects: economic analysis, national accounting, economic development, planning and programming techniques, preparation and evaluation of projects, development policy, organization and administration and other related subjects. The second part covers seven specialized study options, respectively for general programming, programming in the public sector, national budgeting, industrial programming, transport development, manpower development and agricultural development.

(d) *Outline of the specialized option on industrial programming.* This study option is especially designed to meet the training needs of economists, engineers and other groups of professional personnel interested in the development of the manufacturing industry. The study programme comprises the following groups of subjects: general problems of industrialization (60 hours), economics of the industrial enterprise (25 hours), linear programming (30 hours), study of specific industries (90 hours) and seminar on the application of industrial projections.

4. *Asian training course on development policies and problems*

(a) *Organization.* The course is organized annually for six months (February to July) by the Asian Institute for Economic Development and Planning, United Nations Economic Commission for Asia and the Far East, Bangkok, Thailand.

(b) *Purpose and participants.* The general training course is offered in the field of economic development and planning for participants sponsored by the governments of countries in the Asian and Far Eastern region.

(c) *Outline of study programme in the industrial field.* In the context of the aforementioned general course, a seminar is held on industrial development covering the following subjects: general objectives of industrial development, choice of alternative investments, industrial programming, role of small-scale industry, project appraisal, industrial financing and a discussion with reference to problems specifically pertaining to the Asian and Far Eastern region. Field visits and a syndicated exercise in problems of industrial development are also incorporated as part of this specialized study programme.

5. *Industrial project evaluation course*

(a) *Organization.* The course was organized from March to June 1965 (12 weeks) by the Economic Development Institute, International Bank for Reconstruction and Development, Washington, D.C., United States of America. It was also conducted on a regional basis (India, 1964) and in Spanish (with special emphasis on problems of Latin America).

(b) *Purpose and participants.* The courses are conducted for government officials whose work is directly related to the formulation and evaluation of development projects.

(c) *Course programme.* The main topics covered include: definition of the industry sector and its internal structure; main elements of industrial projects, defined in terms of input and output, with the concept of value added; importance of accounting and financial analysis and the differences between private or enterprise accounting and social or economic accounting; cost analysis, use of break-even charts, and economies of scale; analysis of the market, and role of transport and distribution costs; relationship between planning and projects, and engineering, costing and execution of projects selected as desirable; development of industrial capital markets and role of development banks; evaluation of organization and management, and development of an industrial labour force; problem of protecting new industries; analysis of infrastructure projects closely related to industrial growth (e.g. power); and development of various supporting institutions such as industrial estates, productivity centres and technological institutes.

Syndicate exercises are used at appropriate points during the course. These are case studies, presented in the form of problems requiring decisions that combine the necessity for technical analysis, sound analysis of policy issues, responsible assessment of intangible factors, and ability effectively to present a particular point of view.

Each course has two major field trips of approximately one week each. One of these is to New York City, to visit major financial institutions and United Nations Headquarters. The second is to a major industrial centre, usually in the mid-western region of the United States or in Canada. A few short half-day trips are made to industrial plants each within reach of Washington.

APPENDIX B

Estimated industrial employment (million persons)

Region	*1960*	*1975*	*Increase*
Africa	4.5	7	2.5
Asia	33.0	76	43.0
Latin America	10.0	20	10.0
Total (developing countries)	47.5	103	55.5

The above estimates were included in the reports of the thirty-seventh session of the United Nations Economic and Social Council and are based on the *United Nations Statistical Yearbook,* the ILO *Yearbook of Labour Statistics,* and other official data. The data relate to salaried employees and wage-earners only. In the African region, South Africa has been excluded, in the Asian region, the Asian Republics of the USSR and Japan. The 1975 projection is based on an aggregate manpower requirements approach, assuming the following annual growth rates : Africa (3.1 per cent), Asia (5.7 per cent) and Latin America (4.7 per cent).

Costs of training of higher personnel

The data below are based partly on reports of the United Nations and the Organization for Economic Co-operation and Development and partly on hitherto unpublished documents prepared by the author for the United Nations Centre for Industrial Development.

(a) *National training.* Costs for education and training of engineers at national universities in developing countries are expected to amount in 1970 to the following:

Recurring costs per student	$US 600 to 1,600 per year
Capital costs per student place	$US 4,000 to 10,000 " "

These estimates assume a five-year duration of the university studies and exclude living and other personal expenditures. It is noted that some estimates, notably in the Asian region, quote lower cost figures, but may relate to different academic curriculum standards.

(b) *Regional training.* The costs for six months' regional training are currently estimated as follows (in $US):

Region	*Total*	*Tuition*	*Travel*	*Allowances*
Africa	2,400-2,900	400	500-1,000	1,500
Asia and Far East	2,150-2,650	400	250- 750	1,500
Latin America	2,500-3,000	500	500-1,000	1,500

In the above estimate, the salary which the fellow may continue to receive at home is not included. Allowances are based on board and hostel facilities as offered in good university or training centres.

(c) *Inter-regional training.* Individual costs for six months' inter-continental training in Western Europe and North America may be roughly estimated as follows (in $US):

Place of training	*Total (excluding travel)*	*Tuition (direct and indirect)*	*Allowances*
Western Europe	2,550-2,800	750-1,000	1,800
North America	2,900-4,400	1,500-2,000	2,400

Salaries of fellows are not included. A sum of $US 1,000 to $US 1,200 may be assumed as the average cost for inter-continental travel.

APPENDIX C

Bibliography

Reference is made to the following documents and publications, issued in recent years by the United Nations and the Organization for Economic Co-operation and Development:

United Nations, Reports of the Thirty-seventh Session of the Economic and Social Council

United Nations, Reports of the Fifth Session of the Committee for Industrial Development

United Nations, *Towards a New Trade Policy for Development*

United Nations, *Report on the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas* (United Nations publication, Sales Nos.: 63.I.21 — 63.I.28)

United Nations, *The Growth of World Industry 1938-1961, National Tables* (United Nations publication, Sales No.: 63.XVII.5)

International Labour Office, Reports of the Conference on Employment Problems of Automation and Advanced Technology

Organization for Economic Co-operation and Development, *Foreign Skills and Technical Assistance in Economic Development*, 1965.

In the preparation of this paper, use has further been made of various other sources of documentation. Two objectives were specifically pursued in this connexion. In the first place, the aim was to assess training needs in the field of industrial economic administration. Reports on regional industrial progress were therefore examined and supplemented by further study of national industrial development plans of selected countries in Asia, Africa and Latin America (several countries per region). Secondly, a brief review was made of the training facilities offered by the United Nations, its regional commissions and specialized agencies, by multilateral organizations, by bilateral governmental and private organizations, and by a number of institutes offering industrial or economic development training courses.

REVIEW OF PROBLEMS INVOLVED IN THE TRAINING OF ECONOMIC ADMINISTRATORS IN THE FIELD OF INDUSTRIAL DEVELOPMENT

by François van Hoek *

In accordance with the provisional agenda for the meeting of the interregional working party on the training of economic administrators of the developing countries in industrial development, the object of this paper is, first, to describe the training courses at present available for economic administrators specifically responsible for organizing industrial development in the developing countries. The ways in which these courses can be adapted to the real needs of these countries will also be discussed. Lastly, the author was asked to outline a training programme that would best suit the needs and responsibilities of these administrators.

The first step is to define the scope of this paper so as to narrow down the field of study and avoid unnecessary duplication with other papers compiled for the same meeting. This will be extremely difficult however, first, because, in order to remove any possible ambiguity, the term "economic administrator in industrial development" must be defined and second, because, before suggesting an appropriate training programme, we have to touch on the various problems which must be taken into account. This will be the subject of the second part of the paper.

With regard to the definition of the term "economic administrator in industrial development", it should not be assumed that it embraces everybody directly or indirectly concerned with industrial development in the public or private sectors. This paper will be limited to the economic and technical government staff who take a direct part in working out and implementing industrial development plans and programmes, and the senior officials who run the administrative machine. Attention will be concentrated on the officials of government institutions responsible for working out and implementing industrial development programmes and the executives of specialized national institutions, such as development banks.

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This restrictive definition in no way implies an underestimation of the bottleneck created in developing countries by the lack of skilled personnel for new or expanding industries. A great deal remains to be done in organizing training for the staff required for the starting up and expansion of the various industrial units —large, medium-sized or small. We feel, however, that this problem, important as it is, does not fall within the terms of reference of the discussion as a whole or of this paper in particular.

Last, before going any further, it appears necessary to define the meaning of the word "training", as opposed to education, which it completes, but cannot replace.

Industrial development training facilities available at present

Bearing in mind the definition of the economic administrator in industrial development given above, no sound, well-balanced training course, so far as we know, has yet been specifically designed for existing or prospective government economic administrators responsible for industrial development in developing countries. A more detailed analysis of the various training facilities will, however, show that there are, in fact, four types of programmes or courses connected in one way or another with industrial development. These will now be briefly described, with certain examples.

First, there is a wide range of programmes differing in content, but all entirely devoted to industrial development. They are primarily, but not exclusively, intended for business executives. The emphasis is on the development of the industrial firm and the programme itself is aimed at helping to overcome the difficulty of filling management posts. Generally speaking, these courses consist of lectures and theoretical studies, visits and work in firms. Examples are: the course of the Centre d'études industrielles (Industrial Study Centre) of Geneva; the training courses organized by the Istituto per la Ricostruzione Industriale of Rome, or the course organized at Delft by the Research Institute for Management Science, although the latter mainly deals with the development of medium-sized and small firms. These courses do not aim at teaching techniques, but at developing the qualities and attitudes required for the smooth running of a firm. Although this type of programme may be very useful in training executives from the private and public industrial sectors of the developing countries, it does not seem suitable for the economic administrators specifically responsible for industrial development in these countries.

This category of courses, entirely devoted to industrial development, includes —although it was conceived for a different purpose —the four-month course which the Institute of Social Studies of The Hague intends to open in September 1965. This course is intended, by all accounts, for those wishing to specialize in industrial planning and to concentrate more specifically on working out industrial projects. Its working principle is that all economic planning in a developing country will remain a dead letter in the absence of properly thought-out industrial projects. Part of the course is, however, devoted to the relationship between industrial projects and over-all or sectoral planning. Part B of this paper will show to what extent a course of this type can substantially contribute to the training of government economic administrators in industrial development.

The second category of training courses in industrial development could also include programmes entirely devoted to a specific aspect of industrial development and intended only for government officials, for example, the special four-month course on the assessment of industrial development projects run by the Economic Development Institute. Because of the very nature of the institute —which is a branch of the International Bank for Reconstruction and Development (IBRD) —the emphasis is on industrial development and the role of development financing institutions, and prominence is given to the preparation and assessment of development projects. In the same category and designed for the same purpose are other more or less similar courses —likewise often organized in the first stages with the aid of the Economic Development Institute of the IBRD —in a number of regional institutes in Asia or Latin America.

Though very similar to the previous category, we should like to include in the third category the training courses for government officials organized on an irregular basis and not institutionalized, which are devoted to a specific aspect of industrial development. An example of this is the course on industrial programming held from February to May 1965 in Cairo, which was organized by the Institute of National Planning in conjunction with the Economic Commission for Africa (ECA), the ECA Institute of Development and Planning Studies and the Industrial Development Centre of the United Nations.

Lastly, courses on industrial development in general, or on certain problems arising from it, are a more or less important aspect of training programmes in economic development. The various courses include, between them, a considerable number of subjects having some connexion with industrial development, such as the history of industrial development in industrialized or developing countries, the theory of location, the financing of industrial development, inter-industrial relations, the role of State enterprises, etc.

Some programmes in this category, however, have specialized branches or, by virtue of the nature of the institute itself, pay particular attention to the development of industry, as, for example, the general six-month course of the Economic Development Institute for all types of government executives, or the industrial planning section, which is part of the eight-month course offered by the Institut international de recherches et de formation en vue du développement harmonisé (IRFED) (Research and Training Insitute for Harmonious Development), in Paris.

In short, certain facilities for industrial development training exist both in industrialized and in developing countries. They all, generally speaking, aim at training nationals from developing countries, and all, whatever form they take (grounding or refresher courses), and whatever angle they concentrate on (development of the firm, planning, etc.) go a long way towards satisfying definite and specific needs felt in most, if not all, developing countries. It would, however, be difficult to state with conviction that they entirely meet the training needs of government economic administrators whose specific task is to organize industrial development in their countries.

A. Basic problems

This conclusion leads us to ask what type of programme would in fact best meet the needs of governments of developing countries? As stated in the Introduction, this question can be answered only after referring to a certain number of basic considerations that affect training programmes. First and foremost is the principle, widely accepted in theory though not sufficiently emphasized in practice and in training courses, that an industrial training programme cannot be planned in isolation, without due regard for the development needs and potentialities of other sectors of the economy. As P.S. Lokanathan very rightly said, when speaking in particular of the developing countries in Asia, "... agriculture may be the most strategic factor of growth and industrialization may be very much conditioned by the growth of agriculture".[1] Allowing for differences in proportion, this rule does not apply to the Asian countries alone. If it is true that agriculture and agricultural development condition industrialization, this may also be said of the development of the economic and social services.

The second basic consideration which must be borne in mind by the economic administrator in industrial development is the importance of political options which are often based on criteria that are not purely economic or technical. The question then arises of how to reconcile the various aims and options dictated by politics with those of the industrial development plan. Too little attention is perhaps paid to this problem in the few training courses at present available. Yet there is no lack of examples of such conflicts of aim: how to ensure both full employment and higher incomes; how to raise incomes while retaining the principle of equality; how to develop industry on a national scale while ensuring a certain balance between regions.

It is not the intention of this paper to dwell on the many complex problems of industrial development which government economic administrators must bear in mind when performing their duties. In addition to the two problems mentioned, which it is enough to indicate without further elaboration, there are a certain number of others. First, as regards the technical working out of industrial development plans, reference may be made to the many difficulties resulting from lack of basic data and an adequate system of national accounts and input-output tables. Many difficulties also arise at the level of administrative procedures and conception.

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[1] P.S. Lokanathan, "Elements of a Programme for Industrial Development", in *Training Programmes in Economic Development*, OECD, Paris (1963).

Government officials who organize industrial development must at least be conscious of these difficulties. But if they are to do their job properly, they must also be endowed with certain human qualities, practised judgement and considerable shrewdness. This combination of qualities of a non-technical nature, which may be described as "state of mind", is of vital importance and can hardly be acquired in a training course. What is needed is a strong dose of common sense, the gift of leadership coupled with a broad outlook on the economic and social position of the country, plus the desire and ability to assume responsibility. Let it not be forgotten that administrators in developing countries are often obliged to make "*ex ante*" decisions without being in full possession of the facts and figures which are such a help to their colleagues in industrialized countries.

B. A well-adapted training programme

In the light of these considerations, what should be the characteristics of a training programme aimed at giving government economic administrators a better preparation for their industrial development duties? It seems to us advisable to begin by distinguishing the specific training needs of those attending the course. First, there are the government economic administrators who, after being graduated from a university, have acquired several years' experience and hold responsible government positions. Experience has shown that this category of senior officials cannot spare four, six or twelve months to meet the requirements of a complete training course. What is needed here is a short but concentrated refresher course which will include practical study of the trials and errors of other countries, not necessarily the most industrialized. In our opinion, insufficient attention is given to the valuable experience of countries still only moderately industrialized. Perpaps the Industrial Development Centre and the regional institutes of the United Nations could help to make the experience of these countries more widely known by making certain objective sample studies, and promote the exchange of ideas and experience among administrators of developing countries in various regions of the world.

The second category of trainees will be the younger people whose task is to assist the senior officials in the immediate future and eventually to take their place. This category is larger and it is easier for them to absent themselves from their jobs to complete their training. Assuming that they have a university education, there is no point in giving them, for one or even two years, a little more university education. What they really need is to perfect their knowledge of certain fundamental principles and issues by means of a training system that will include special courses, practical work and observation. The latter is frequently absent from training programmes offered to officials from developing countries. Yet experience has shown that active and well-guided participation in the everyday work of a well-run industrial development institute does much more than merely supplement the course followed. Thanks to these visits, which even the best courses cannot replace, the participant becomes aware of the practical difficulties and obstacles that he will frequently encounter when he comes to put theory into practice. Here again, we feel that greater co-operation between the developing countries would be more than welcome.

Although the specific needs of these two categories, and the means of satisfying them, are not the same, all training programmes of this type will be directed towards the same goal: namely, completing the student's technical knowledge and acquainting him with all the methods and techniques employed, preferably with success, in other countries, not necessarily the more industrialized. It seems hardly necessary to stress that to observe and study the experience of others does not mean copying it. Indeed, the political, economic and social problems of industrial development are so specific to each developing country that one often wonders whether at least a part of every training course should not take place in the country itself, or bring out these differences clearly. That is why, if these courses are given an institutional framework that will at least reflect the main economic and social characteristics of the countries participating, their effectiveness will be substantially increased.

Where training has to be given at a distance from the real practical conditions of industrial development, we think it essential that the following remarks, at least, should be noted. First, a certain number of orientation courses should be given either in the country itself, or on a regional basis. At the same time, there should be a detailed and precise definition of the type of training programme that would best suit the aptitude, preferences and future responsibilities of the participant. There should also be some kind of follow-up after the trainee has returned home. In this context, it would be profitable to envisage, on a short-term regional basis, meetings of former trainees, who could exchange their recent experience and keep in touch with current theoretical developments and recent experience in other areas. It is certain that, under the auspices of the United Nations, the Industrial Development Centre and the regional institutes could be instrumental in organizing preliminary orientation courses, a training programme and periodic meetings. They should also examine the various ways of facilitating and promoting the transfer to their colleagues and associates of knowledge acquired by former trainees in order to increase the snowball effect of these courses.

In conclusion, we should like to touch briefly upon the subjects which we feel ought to be included in a training programme for government economic administrators concerned with industrial development in the developing countries. These subjects could be dealt with in the orientation course, in the training course itself, or during the visits and practical work. Senior officials with several years' experience should be able to refresh and broaden their knowledge of the subjects in question. But for the category of young administrators defined above, a minimum of at least one year would, we feel, be necessary. All trainees, however, need a certain amount of time, if only to obtain a general picture of the varied and complex problems of industrial development. The following list is intended only as a reminder, inadequate though it may be as yet, to the organizers of the training courses. It makes no reference to the problem of state of mind, as described in part A, since it appears difficult, if not impossible to inculcate these qualities by means of a training course. But tutors should keep this in mind during the whole period of specialized training.

Subjects considered particularly useful in a training course for government economic administrators responsible for industrial development in a developing country (not in order of priority):

Sociology of industrial development;
Obstacles to industrial development in developing countries;
Agriculture and industry: economic growth relations;
Political options, choice and decision;
Programming the needs for intermediate executives and vocational training problems;
Industrial development institutions;
Classification of industries;
Industrial programmes and projects;
Micro-analysis and macro-analysis;
Industrialization and regional development;
Urban concentration, polarization, manpower migration problems;
Industrialization and integrated development;
Past history of industrialization;
Role and function of foreign aid in national industrialization.

ADMINISTRATION OF INDUSTRIAL PROGRAMMES IN DEVELOPING COUNTRIES

by Celso Furtado *

The present study was prepared on the basis of my personal experience as an administrator of programmes of industrial development in my country (Brazil), first as a member of the board of directors of the National Development Bank and, for more than five years, as executive head of the superintendency for the development of the north-east (Sudene). I intend to discuss the functions of the economic administrator dealing with problems of industrial development and to submit some suggestions on the training needs for this type of executive personnel. Attention will be focused on problems raised by the implementation of programmes of industrialization in a really under-developed area, i.e., areas with *per capita* incomes of around $100, or where modern industry is practically nonexistent. The group of developing countries with an advanced process of industrialization, such as Chile, Mexico or the central southern area of Brazil, present particular problems that will not be considered here. The conclusions submitted concern the administration of industrial programmes in countries such as Bolivia, Ecuador or the north-eastern area of Brazil.

Although it must be acknowledged that there is a basic feed-back cycle common to all levels of the industrial development process, and that the viability of the objectives of a programme has to be verified by comparing the partial results obtained with those objectives in a continuous process, for practical purposes it is very important to draw a clear distinction between the formulation and scheduling of a programme and its implementation. The reason for introducing this clearly defined distinction is that, during the first phase, concerned with formulation and scheduling, it is easier to rely on skilled personnel hired temporarily out of the area or supplied by agencies specialized in technical assistance. On the other hand, those responsible for implementing the programme must have a thorough knowledge of the country and be familiar with the cultural patterns and aware of the role of the leading elements in the community. As the two kinds of skills very rarely can be found together in developing countries, it seems advisable to emphasize the difference between the formulation phase, when technical requirements are most needed, and the implementation phase, when knowledge of the social reality is more essential.

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It may be important to differentiate from the beginning between the industrial programme as such, and the over-all plan of development of which the former is part. As before, this distinction is aimed at restricting the competence required of personnel responsible for carrying out an industrial programme, thus allowing for the recruitment of such personnel in a backward area or country.

There is a broad measure of agreement that industrial programming must be integrated in the frame of an over-all plan of development. Let us therefore assume that an over-all plan has been formulated and that one of the basic objectives of such a plan is to increase investment in the industrial sector. To back the policy of industrialization, a broad programme of investments is drawn up including : (*a*) a survey of the natural resources to be carried out in successive phases, so that practical results may be expected in the short as well as in the long run; (*b*) a progressive improvement of the human factor, covering basic as well as professional levels, and aiming at achieving results in the short and in the long run, and (*c*) an enlargement of the infrastructure of basic industrial services aimed at creating external economies in the industrial sector. Industrialization policy thus covers four different areas: natural resources, human resources, infrastructure, and manufacturing productive capacity. The first areas also interlock with the programme of agricultural development which, on the other hand, is connected with the industrial programme through the supply of inputs for several industries and outputs for the population working in the industrial sector. Finally, the two sectors producing goods are indirectly connected through external transactions, since a part of the production has to be exported and a part of the agricultural and industrial inputs has to be imported. A dynamic approach to this complex system of inter-industry relations is essential to any technique of planning. Nevertheless, the administration of an industrial programme may be carried out under the supervision of personnel with a limited knowledge of most of the technical aspects of such problems.

Co-ordination of the industrial programme and subsidiary programmes aimed at improving the quality of factors of production and at enlarging the infrastructure of industrial services has to be secured at the highest executive level in the development agency. The best way to achieve co-operation among departments covering different fields is to have a joint staff of specialists advising the executive head of the development agency. A general staff of this kind can be responsible for checking the congruence of the different programmes during the implementation phase, and opening the way for the adoption of an interdisciplinary approach in the decision-making process. As a member of the highest board under the executive head of the development agency, the head of the industrial department has access to all relevant information about the implementation of the connected programmes. However, his responsibility is limited to the implementation of the industrial programme, which has to be minutely detailed. This limitation of responsibility is required if the programme is to be carried out under the supervision of locally recruited personnel.

As already noted, the general directives of an over-all development plan represent the starting point for the formulation of an industrial programme. However, to spell out such a programme is a task of no small complexity. The over-all plan includes the basic political definitions that have to be incorporated in the industrial programme. Thus, the nature and scope of governmental action in the field of organization and administration of production of goods and services is a matter of substantive definition pertaining to the political sphere. The kinds of instruments that the administrator of the industrial programme can use are equally a matter of political decision. The nature of the fiscal stimuli, the scope of the financial support, the kind of technical assistance and other tools at the hand of the administrator of a programme, are matters of political decision and have been established beforehand in a somewhat inflexible manner. However, all these structural parameters represent only the general framework of the industrial programme, which has to be drawn up on the basis of a detailed survey of the existing industrial structure and has to display a set of quantitative production targets. This integrated set of targets gives unity to the complex activity of the department responsible for the implementation of the industrial programme.

The most complex problems relating to the allocation of resources have to be dealt with during the phase of the formulation and scheduling of the industrial programme. Such problems concern the time horizon to be adopted, the criteria to be used in the selection of specific projects, concerning the shape of production functions (input-output-relations), the amount of imported inputs allowed, the pattern of the final demand most desired, and so on. All the basic decisions concerning these complex problems have to be made during the phase of formulation of the programme, so that its implementation could be carried out under the supervision of personnel without advanced technical training. Highly complex technical operations are involved in detailing the industrial programme, and it is for this that the most skilled personnel must be recruited. International technical assistance can yield very fruitful results during this phase. However, the programme is not really ready for implementation until it is unfolded in a set of operational sub-programmes, each one comprising a set of tasks detailed in such a way that its execution can be carried out under the supervision of persons with limited experience and skills.

Thus, although theoretically there is no real distinction between planning and implementation, for practical purposes it is convenient to draw a clear line between the two. First comes the formulation of the over-all plan, which includes the main directives of the development policy in the industrial field and defines the institutional parameters of the execution of that policy. Second comes the formulation of the industrial programme, which comprises the design of a set of quantitative production targets, the statement of the economic criteria to be followed in the allocation of scarce resources, and the itemization of the programme into detailed sub-programmes, with clear indication of all the main steps to be taken by the administrative authorities. The third phase consists of the implementation of these operational sub-programmes, including checking the results obtained. There is little doubt that a basic feed-back cycle is common to the three phases. However, a meaningful problem of administration arises only in connexion with the third phase. By emphasizing the role of the feed-back cycle, the need for a neat division of tasks, which is a *sine qua non* for a better utilization of the human resources available in the developing areas, may be overshadowed. Experience has fully demonstrated that it is always possible to gather a highly skilled group of experts to help in drafting an over-all plan, including an industrial programme detailed down to the level of the operational sub-programmes and specific projects. Nevertheless, the implementation of such a programme most frequently fails as a result of the inadequacy of the local team responsible for it. Unless a team of administrators is prepared to over-come the difficulties of the initial administrative phase, the possibilities of the success of a development plan are bound to be extremely scanty. As this team has to be formed with locally recruited personnel, no matter how limited the supply, it is of utmost importance that the execution of the programme be itemized in a set of clearly defined tasks.

To specify in detail all the steps to be taken to implement an industrial programme it is necessary, in the first place, to divide it into a set of operational sub-programmes. It is generally acknowledged by those with experience in the implementation of industrial programmes that most of the work can be divided and itemized, so that the supervision of its execution can become largely a matter of routine. Once the programme is translated into a set of clear-cut tasks, the training of the personnel needed to supervise implementation becomes much simpler.

Let us assume that, in a given area, an over-all plan has been drawn up setting as one of the basic objectives an absolute and relative increase in industrial investment. To fulfil the targets of the industrial programme, the following lines of action are established: (*a*) to improve labour and capital productivity in the textile industry; (*b*) to start edible oil industry based on local raw material; (*c*) to set up a cement industry, and (*d*) to expand the small metallurgical industry.

Once the basic lines of action have been set out, the next step is to translate each item into an operational programme. In regard to the first one, designed to improve productivity in the textile industry — which is a traditional business in the area — the preliminary step, as usual, is to take inventory of the industry, by means of a survey of all the plants from the economic, technical and financial points of view. This survey can be made by a small team of three experts (a textile engineer, an industrial economist and an accountant), staying from three to five days in each plant. It has to be carefully planned so that all data collected may be easily checked and related to the industry as a whole. On the basis of the preliminary survey, a general programme will be established aimed at improving the productivity of the industry as a whole. The programme does not need to include many details at this stage. Reference will be made to the approximate amount of investment required to modernize the industry, to existent plants with limited economic viability, to specific lines of production that have to be expanded, to the location of new plants, to the techniques to be chosen in case of modernization and to other points of a general character.

Assuming that the textile industry is privately owned, the second step has to be a clear indication of all the benefits (tax rebates, liberal credit policies, low interest rates, preferential exchange rates) that the development agency is making available to industrialists interested in following the directives of the programme. However, the efficiency of such an indirect approach is bound to be limited in the case of a traditionally settled industry. To break down initial resistance, it may be necessary to prepare a detailed document to guide industrialists in all the steps they are required to take. This document has to be drafted in very simple form and must include minutes of each document that the industrialist is expected to draft himself, especially of the applications that he will be required to submit to the development agency. Furthermore, this document must guide industrialists in all phases of preparation of an industrial project aimed at modernizing or expanding an old plant, as well as at setting up a completely new one.

The main obstacle to overcome in the implementation of an industrial programme arises from the lack of initiative of actual or potential entrepreneurs in responding to the incentives offered by the development agency. Behind this reluctance is frequently to be found the suspicion that an industrial project on the lines required by the development agency is something too complicated, even beyond the understanding of an ordinary person. Since the industrialist is inclined to think that the expansion of his business entails an increase in his risks, it is quite obvious that, to induce him to act, it is necessary, in the first place, to overcome that suspicion. On the other hand, the high costs charged by firms specializing in preparing industrial projects is enough to deter most industrialists with limited resources. The best way to overcome such difficulties is to induce industrialists to prepare industrial projects themselves, with the co-operation of the personnel of their own plants. This is possible only if the guiding document prepared by the development agency is sufficiently explicit. Such a document has to include all the tables which the industrialist must fill in to produce an adequate description of the technical characteristics of the plant and of the economic and financial situation of the firm. In the tables relating to the productive process, reference must be made to all units used in measuring the relevant input and output. Filling in such tables is a highly educative task for the ordinary industrialist in a developing country. It helps him to understand the exact economic and financial situation of his firm and makes it easier to grasp the relationship between the branch in which he is operating and the economic system as a whole.

The preparation of preliminary projects by industrialists may become easier and present an even higher educative value if the development agency holds seminars on the subject, with industrialists attending. Such seminars are basically intended to elucidate questions which industrialists raise in connexion with filling in the tables of the document prepared by the development agency. It is assumed that the document has been distributed to industrialists some time before, and that they have already started preparing their own projects. Two or three months after such distribution, they are invited to attend a part-time seminar, whose ostensible objective is to help improve the document.

A team of specialists of the development agency prepare a theoretical project during the seminar and the discussion is opened in connexion with each table that has to be filled, so that the industrialists may raise specific questions and elucidate their doubts. It may be advisable to include visits to some plants, so that the discussion of certain specific problems may have practical significance.

With a few exceptions, the projects prepared by the industrialists are only preliminary documents. However, in preparing them, they gain an insight into their own situation that will facilitate the work of the experts of the development agency responsible for appraising the projects. On the other hand, very abundant first-hand material on the situation of the industry will be made available to the staff of the development agency, on the basis of which it will not be difficult to complete the projects. The additional costs incurred by the development agency in preparing definitive projects will be partially compensated by the economies brought about during the phase of project appraisal and by the more effective control secured during the implementation phase.

In any programme aimed at improving productivity, modernization of equipment must be supplemented by efforts to improve the quality of the staff, particularly of skilled workers. Only the development agency can do anything really effective in this field in the short run. Very intensive full-time courses over a span of three to four months can be organized by the development agency for groups of twenty to thirty skilled workers. The firms are invited to release the workers, paying their wages during the period of training. The development agency could supplement the wage if the worker is required to incur additional expenses. If all classes are carefully prepared beforehand and modern material is used, such courses can be very fruitful. The presence of a group of workers informed of the modernization programme and conscious of the advantage that it can entail for themselves and for workers in general may be essential to the success of the programme as a whole. It has to be made clear to industrialists that workers receiving additional training through the development agency have to share in the greater returns yielded through their efficiency and that labour in general is expected to benefit from the investment brought about as a part of the development programme.

The preliminary survey of textile plants, the elaboration of a document to be used by industrialists in the preparation of their projects, as well as the technical material for the seminars on the preparation of projects and courses for skilled workers, have to be carried out as part of the detailing of the operational sub-programmes. Technical assistance from specialized agencies can be fully utilized in the course of this action. Furthermore, the personnel that will carry out the programme have to be trained during this phase. Thus the technical assistance personnel helping in the preparation of operational sub-programmes can be utilized in the special training programmes aimed at forming the local staff responsible for the future implementation of the industrial programme.

Let us now look at the other items of the industrialization programme. The second is concerned with the setting up of an edible-oil industry based on domestically produced raw materials. It is a new industry aimed at substituting imports and improving the diet of the population. The initial survey in this case includes a study of the sources of raw materials and of the possibility of expanding such sources. On the basis of such studies and of an analysis of the actual and potential markets for the final products, preliminary projects could be prepared and made available to industrialists and other persons potentially interested. In this particular case, the development agency has to promote the idea of the new industry publicizing basic information on the economic and technical characteristics of the industry, and stressing the relative importance of the fiscal, financial and monetary incentives. Taking into account that the producers of the raw material are potentially interested in the new business, a seminar could be held with the attendance of representatives of such a group covering more specific aspects of the problem and approaching the analysis of a specific project. Particular reference must be made to the positive effects brought about by the expansion of the new industry on the raw material market, where production can also be the object of particular incentives.

The third item in the programme is the establishment of a cement industry. In contrast to the previous case, where no problem of scale of production was raised, so that great decentralization and a multiplicity of plants was possible, this part of the programme does not allow for more than one or two plants of sizable proportions. Even preliminary studies require the disbursement of considerable funds and the investment might be beyond the capability of local industrialists. Some finance must be mobilized from abroad, requiring government guarantee. For these and other reasons, responsibility for setting up the new industry remains in the hands of the development agency, which may retain control of the administration of the new industry or judge it preferable to transfer it to some private group in a subsequent phase. Even the general decision on the setting up of the new industry requires preliminary studies on the actual and potential market, availability of the main raw material, and dimension and location of plant. However, once these basic points are settled, the development agency may deem it convenient to contract a consultant firm for the preparation of the viability study that will be submitted to the international financial agencies. The engineering project and the construction of the plant may also be the subject of contracts. However, the subsequent administration of the plant must remain in the hands of a local team, which has to be adequately trained during the construction period. The best approach to this problem is through the incorporation of a new firm under the control of the development agency, which serves as a holding institution. All decisions connected with the setting up of the new industry have to be made at the level of the new corporation, whose main responsibility is to make up the team that will manage the new enterprise. Part of the training of key personnel may be obtained abroad, through prolonged visits to similar plants arranged under the Technical Assistance programme.

The final item of the programme concerns the expansion of the small metallurgical industry. In developing countries, repair shops dealing with motorized vehicles, and machines in general, occasionally start producing simple metal goods, including tools, particularly when the regular supply stream is discontinued, as during a war. Such manufacture plays an important role in the training of skilled workers and brings together a number of persons endowed with initiative and inventive capacity. It is not easy, however, to tap this potential source of entrepreneurial capacity. Experience demonstrates that nothing is more difficult than to induce people who handle small, independent workshops to gather in an enterprise involving joint risks. Nevertheless, the general plan may call for a strong effort in this direction, since the development of a local production of mechanical tools to be used in agriculture, building and other activities is of the utmost importance. If the demand for certain items of production is stabilized in advance through some form of price guarantee, holding for a period of three to five years, a group of small producers may be induced to adopt a scheme of division of labour and even join in some common undertaking financed by the development agency.

The four hypothetical sub-programmes to which we have referred cover the most typical elements of an industrial programme drawn up for a really underdeveloped area. The first involves a traditional group of manufacturing industries developed in the past as a result of particular circumstances, but which have failed to retain their original dynamism. The second involves problems connected with the establishment of a new branch of industry relying on existing entrepreneurial capacity. The third relates to the establishment of a new branch of industry as an undertaking in the public sector. The fourth is illustrative of the endeavour to transform a craft experience into an organized manufacturing industry in a sector where the technical skill is a factor of great importance. The four cases are widely different. However, in all of them the planning phase can be extended so as to include the detailing of operational sub-programmes. This helps to make of the implementation phase a sequence of tasks that can be carried out as routine work. For purposes of target designing and cost accounting, an operational sub-programme must be conceived as a unit. From an administrative point of view, however, this need not be the case. The administrative structure of the industrial section in a development agency is a function of many factors, such as dimension of the programme, scope of the agency that may or may not have financial responsibilities, etc. In any event, the operational sub-programme is a device which, independently of the constraints imposed by the administrative structure, may help to centralize around a single purpose a great number of operations carried out by persons working in different administrative units. It may be advisable, during certain stages of the execution of a sub-programme, to bring all functions under unified command, by constituting an *ad hoc* group of persons from different sectors, or it may seem convenient to place full responsibility for supervision on one of the administrative sections, for some time. All these points have to be clearly indicated in the schedule guiding the implementation of the operational sub-programme.

To the extent that the industrial programme can be itemized in operational sub-programmes, the functions of the economic administrator will become simpler. Personnel prepared to perform such functions can be trained over a period of four to six months under the supervision of highly qualified experts. Such personnel must have a basic professional training as economists or engineers. The course referred to here has the limited objective of familiarizing future administrators with the broad aspects of the process of economic development and the basic principles of the technique of general and industrial planning.

In formulating a training programme for economic administrators, it must be borne in mind that the object is to broaden the view of the economist or engineer, and by no means to teach him professional skills. The professional must be helped to concentrate on the more relevant aspects of the development problem, and particularly to take account of basic points in handling specific problems submitted to him.

A course of some 600 hours of conferences and seminars would include 240 hours allocated to complementary training in the use of basic tools, such as systems of national accounting and input-output analysis (80 hours); statistics for the use of economist (80 hours) and technique of programme-budgeting applied to economic planning. For the substantive part of the course, the following disciplines are suggested: (*a*) introduction to the theory of economic development (80 hours); (*b*) introduction to the technique of economic planning (80 hours); (*c*) analysis of the industrial sector and industrial planning (100 hours); (*d*) the economy of the industrial enterprise (100 hours).

To be really effective, such a course has to be carefully planned, and all the reading material selected and prepared beforehand. Co-ordination among disciplines requires rigorous planning of classes and seminars, which can be achieved only if the general supervisor has a thorough knowledge of the fields of development and economic planning. The experience of the last ten years has demonstrated that this type of course can be easily organized with the help of experts recruited through the specialized agencies of the United Nations.

The present paper has ranged over a wide field but has sought to focus attention on the practical importance of a clear-cut distinction between planning and implementation. The experience gained in the last fifteen years makes it only too obvious that it is much easier to prepare a highly sophisticated plan than to implement even a mediocre one. On the other hand, even the very elaborate exercises prepared for developing countries and labelled "development plans" fail to include instructions on how to get things done, leaving a wide gap between general schedules and the specific decisions which the administrator is expected to make when he embarks on implementation. Since it is much easier to gather a highly skilled group of persons for a limited period of time to help a country in drawing up a plan than to form a permanent staff of a high technical level in such a country, the need for a reconsideration of the nature of planning tasks has been emphasized; such reconsideration would include the preparation of detailed operational sub-programmes, even to the drafting of time-schedules on the lines of the technique of programme-budgeting. This would simplify the task of the administrator of an industrial programme and make it possible to rely on locally recruited economists and engineers who have satisfactorily completed four to six months' courses on development and planning.

The success of a development policy depends very much indeed on the co-operation of persons prepared to use advanced economic techniques and to understand a complex social reality. In a developing country or backward area, the best way to make the most of these two scarce qualities is to extend the scope of the planning phase, so that the technical responsibility of the administrator, who must have a thorough knowledge of the social reality, may be channelled through to the specific areas concerned.

CONCEPT AND FUNCTION OF ECONOMIC ADMINISTRATORS IN INDUSTRIAL DEVELOPMENT PROGRAMMES

by Richard S. Thorn *

Any wonderment as to what characterizes an industrial economic administrator is justified since, to the best of my knowledge, this is the first meeting ever devoted to the study of the concept, function, and training of such persons. One of the contributions that this Working Party will make is to determine whether an industrial economic administrator is a sufficiently different type of public official to warrant study and training or whether he is merely the traditional public servant under a new name.

To investigate the nature of this possibly new species of public official, two approaches will be taken. One will be to trace the sequence of circumstances which led to the present emphasis on problems of economic administration and the training of administrators in implementing industrial development programmes. The other will be to examine the functions of economic administrators in order to see if some distinguishing characteristics may be found which would warrant the specialized study and training of economic administrators.

The emphasis on the uniqueness and novelty of the concept of economic administrator is not intended to imply that public officials have never performed this role in the past. Many officials today are economic administrators in fact, if not in name. The task we have set ourselves is to determine whether these officials who have grown up with their jobs have not, in fact, acquired, at least in part, a specialized set of functions which warrant special attention in the training of the large numbers of new economic administrators that are required by the accelerated industrialization plans upon which developing countries are now embarking.

As the developing countries attempted to accelerate the pace of economic development after the Second World War, they universally arrived at the opinion that, in order to break the vicious circle of poverty in which they were engulfed, positive government action was required to initiate a process of self-sustaining growth. At first, it was thought that lack of capital was the major obstacle to economic growth and principal emphasis was laid on the problem of obtaining an adequate supply of external resources to supplement what was generally a low level of internal savings. However, as the net annual flow of external capital to developing countries increased from some $2,000 million in 1950 to $6,000 million in 1960,[1] it was found that it was not always possible to utilize these funds as rapidly as had been originally foreseen. The situation was taken as evidence of a low absorptive capacity of developing countries to employ financial capital, resulting from inadequate organization in preparing and administering projects and thus attaining a high rate of disbursement.

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Many governments had had little experience in preparing a multiplicity of investment projects, especially industrial projects, responsibility for which had formerly rested largely with the private sector. Nor had countries evolved techniques to stimulate the private sector which would accelerate their rate of investment. Even once many of these obstacles had been overcome, it was found that the investments undertaken were often closely interdependent and that, if they were substantially to stimulate the volume of private saving and investment, some form of co-ordination of investments was required. In the early government development programmes, the organization of industrialization programmes was largely decentralized, if well-defined programmes existed at all, and such programmes were prepared independently by a number of ministries and agencies with little co-ordination between them. To deal with these problems, resulting from insufficient co-ordination between projects and national development programmes, greater emphasis was subsequently placed on economic planning.

Most of the developing countries of the world have prepared, or are in the process of preparing, workable plans for their economic development. As sophistication in planning increases and earlier errors are corrected, emphasis is shifting from the preparation of long-term development plans to their implementation. Country after country has discovered that the fact of preparing a feasible development plan is no guarantee of its implementation.

This situation has been discussed by A. Waterston of the International Bank for Reconstruction and Development (IBRD):

> "Equipped with able civil servants in systems inherited from colonial times, each administrative machine is nevertheless dominated by general administrators (referring to India and Pakistan) to a point which prevents the acquisition and effective utilization of technicians in an era when increased technical knowledge is essential for faster development.
>
> An organized attempt to plan a country's development introduces new and unfamiliar entrepreneurial and managerial tasks on an unprecedented scale. Few countries can cope with the administrative

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[1] *International Flow of Long-Term Capital and Official Donations, 1959-1961* (United Nations publication, Sales No.: 63.II.D.2).

> problems that development planning brings. These problems are so complex that in most developing countries the limitation in implementing plans is not financial resources, but administrative capacity. Large-scale organization, procedures made convincing by years of repetition and cautiousness give rise to 'red tape' and 'the deadening hand of bureaucracy'. Excessive amounts of paperwork, files passing through too many hands, diffusion of individual responsibility through undue reliance on committees and failure to delegate authority lead to over-centralization and delays in decision-making." [2]

Looking back upon the experience of recent years, it may be said that in many countries the concept of planning has been too much divorced from the process of implementation. What has been lacking is some type of feedback process which would link the planning and implementation process.

Contemporary experience with planning has demonstrated that technical planning is not a substitute for political decision-making, but must complement the latter, and that economists are not substitutes for administrators but are part of the team of specialists whom the skilful administrator must be able to direct in obtaining information and assistance in achieving politically determined goals.

To improve the implementation of their development programmes, many countries have felt a growing need to improve the quality and structure of their administrative organization, which in turn requires improvements in the number and ability of their administrators. Economic administrators are called upon to create and administer organizational structures that will implement national development. The type of structure required, and how men can be trained to develop such structures and to operate successfully within them, are questions that will be discussed by other participants.

The present emphasis on administration as a key factor in the economic development process is really a tribute to the quite substantial progress made by developing countries in resolving many of the problems associated with accelerated economic development, even if such progress is not always great enough to satisfy national aspirations. Many economists were concerned at the end of the Second World War that the economic growth of developing countries might not be able to keep up with population growth. But the developing countries have escaped the Malthusian population trap. Their national product grew at a rate of over 4 per cent in the nineteen-fifties, while their population growth in the same period was only between 2 and 3 per cent, so that their *per capita* income has been rising, although there has been considerable variation in the performance of individual countries.

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[2] Albert Waterston, "Administrative Obstacles to Planning", *Economia Latinoamericana* Vol. I, No. 3 (July 1964), p. 348. Mr. Waterston gives many practical illustrations of the problems discussed in this paper.

As the pace of industrial development quickens, so the role of the industrial economic administrator becomes more important. The overwhelming majority of national economic plans and programmes give high priority to industrial development and recognize that a wide variety of measures must be undertaken to stimulate industrial development. These vary from the creation of a general economic and institutional framework conducive to the undertaking of private investment to the direct participation of government in industry.

The wide range of activities embraced by government industrial economic programmes requires administrators with a wide range of skills. The economic administrator must convert the broad political and economic goals of the nation into practical plans and programmes and see that these plans and programmes are carried out. In one sense, the economic administrator is a bridge (although not the only one) between technical planners and political leadership.

The role of the economic administrator embraces a basic action cycle common to all types and levels of administration. It consists of collecting the information needed to analyse complex economic, engineering and social problems, setting objectives, choosing between various alternative courses of action and devising a basic programme or strategy, taking the decisions necessary to implement this strategy, comparing the results with the objectives and taking corrective action where necessary. Such corrective action may require the revision of objectives, a change of strategy, or the appropriation of more resources to the fulfilment of the task, or a combination of all three steps. This basic cycle of administration has been called by many names. I prefer to call it the basic administrative "feed-back cycle", to emphasize its kinship to the "feed-back principle" that has revolutionized engineering and given rise to the so-called "computer age". The application of the feed-back principle to many disciplines is one of the outstanding intellectual developments of our age.

Many aspects of the role of the economic administrator have a parallel in that of the business executive in a large firm, with the important exception that the basic goals of the economic administrator are more complex. While the business executive's job is to maximize the profits of his firm, the economic administrator's task is to maximize the economic product accruing to the nation. The economic administrator must not only maximize the economic product of a particular programme or enterprise, he must also be aware of the effect of his decisions on national goals.

The economic administrator is fortunate in that he may employ quantitative methods in dealing with his problems to a greater extent than other public officials, and this allows him to take advantage of the major developments that have occurred in business management in the last forty years which, in advanced countries, have been called "the revolution in management".

The economic administrator must accomplish most of his goals in collaboration with a wide group of technicians specialized in industrial technology, economics, law, accounting and other fields. This means that he must have a sufficiently broad background in these fields to communicate with these specialists effectively, as well as to take advantage of their advice.

Lastly, the economic administrator must create an organization in which decision-making is effectively decentralized, so that a high level of efficiency may be achieved and so that his own energies and capabilities are not the measure of the organization's potential. The idea of decentralized decision-making, which is essential to efficient administration, is often wrongly thought to conflict with the political principle of the concentration of power in a few hands to produce political strength. I will not comment on the validity of this principle. However, I would like to point out that the principle of decentralized decision-making does not mean loss of effective control. On the contrary, in a large and complex organization it is the only means available to maintain centralized control without much loss of efficiency. Good administration requires that centralized control be maintained, otherwise different elements of the organization may work at cross purposes. An important role of the economic administrator is to devise a system wherein decentralized decisions may be made and centralized control maintained. It is interesting to note that this view has gained currency at approximately the same time in the greatest capitalistic and socialistic organizations of the world. Administrative science appears as a willing slave ready to serve any master.

Returning to the original question, whether the functions of economic administrators are sufficiently different from those of traditional administrators to warrant specialized study and training, the considerations presented above, I believe, indicate that the major difference between economic administrators and other types of public administrators is largely qualitative rather than one of basic function or mode of operation. The functions of all administrators are basically built around what I have called here the "feedback cycle". Qualitatively, however, the economic administrator represents an identifiable and unique type of public official. The special qualities that distinguish him are: (*a*) the wide range of problems with which he must deal; (*b*) the high degree of initiative he must exercise; (*c*) the large number of different types of specialists whose services he must employ and direct; (*d*) the extensive application of quantitative methods in his work, so that he must be well versed in techniques of modern management in the broad sense (implicit in the French word, "*direction*"), which often cannot be applied in other areas of public administration. As noted earlier, there is a parallel between the functions of the economic administrator and those of the business executive, the economic administrator employing many of the administrative methods developed in the operation of private industrial enterprises. While other government administrators may collectively possess one or the other of the qualitative attributes of the economic administrator, these attributes describe a unique type of administrator who is usually easier to identify in practice than in theory. In an effort to make the concept of economic administrator more precise, some insight might be gained by examining a part of the vast literature that exists on the subject of the function and development of the business executive. It is, perhaps, comforting to see that the same vagueness shrouds the concept of the business executive and that of the economic administrator. I think this vagueness exists for substantially the same reasons as *"direction"* consists of performing and co-ordinating a wide variety of functions simultaneously and in an almost intuitive manner, although the tasks performed are not separable in practice. Were it possible to separate the varied tasks and distribute them among specialists, the results would in all likelihood be not greater efficiency but disorder. It is this structural aspect of his duties that makes a precise delineation of the concept of the economic administrator difficult.

Having seen the difficulty of precisely defining the concept of an economic administrator, we shall turn to the still more difficult problem of training officials in economic administration. It is legitimate to ask whether any formal type of training is required. Most administrators learn their jobs through practice, observation and experience; and may this not be sufficient? Two considerations would indicate that it is not. One is that the number of economic administrators required may be so great that the time-honoured method of training just described will not produce enough qualified administrators to meet the demand. The other is that the administrator's present organization may not provide the proper training because of its own inadequacies. The role of the administrator is often to bring about the necessary organizational changes so that efficient techniques of administration may be employed. Thus in many instances measures are needed to supplement existing methods of training. The idea of the possibility of training economic administrators must itself be examined. Since the skill of the economic administrator lies not merely in the possession of a collection of specific techniques, but also in the ability to use them, it is possible that administrators, like artistic virtuosi, may be born, not made, and perhaps one should speak of the development of economic administrators rather than of their training. This approach would accept the view that the individual must have a certain native ability which cannot be implanted by formal methods but which, once found, can be nurtured. Again, returning to the experience obtained in the training of business executives, because this is one of the few similar areas that have been the subject of any considerable study, it has been found that executives are largely born, not made. As a result, executive development programmes in industry, in countries where they exist, consist largely of evaluation of individual performance and selection of competent individuals. The training of the business executive consists largely in giving the individual a varied and well-rounded work experience so that he may be able to comprehend the over-all problem of the firm and learn to deal with the various specialists.

This development concept of training economic administrators, if accepted, has important implications for the type of programmes employed. It means, in the first place, that the recruitment of potentially suitable individuals is essential and, secondly, that proper incentives must be provided for the recruitment of such individuals. If the salaries of civil servants in many countries are compared with alternative employment opportunities, it will be realized how formidable an obstacle this question of original recruitment may be. In addition, the idea that administrators are developed, not trained, means that systems of evaluating potential administrators must be devised and that such officials must be selected on the basis of merit. While this too may appear as an obvious principle of good administration, when it is realized how many countries lack a civil service system based on merit, it will again be seen how difficult it may be to assemble even the initial cadre from which a country's future administrators will be drawn.

Consideration must be given to training all levels of economic administrators. High-level administrators are often convinced that it may be useful to introduce a training programme for their subordinates. But when these subordinates, having completed the training programme, return to their old jobs, they find that there is little opportunity to apply the new ideas and techniques they have learned either because there is little appreciation for the value of these new methods or because the organization is not adapted to applying them. The individual who has received the training becomes frustrated, often to the extent of leaving government service, so that the result is often a loss rather than a gain in efficiency.

High-level officials and administrators must be convinced of the value and implications of the training they are arranging for their subordinates. They must be prepared to accept, in fact, preferably direct, the changes that training will bring about in their organization. If this simple point is not recognized, the time and money spent on training will have been wasted.

The junior administrator will have acquired most of his training before entering government service. The problem in this case is largely one of general education and the provision of the proper incentives to attract bright young men to a career of government service. Steps must be taken to ensure that universities and schools provide good training in the fundamentals of economics, accounting, science and other basic subjects. The availability of this type of training is important for the promotion of industrialization programmes, not only in providing an adequate supply of economic administrators to government but also in providing private industry with the proper supply of managers and executives, which will greatly improve the results obtained by government industrialization programmes.

In many parts of the world, advanced education is still largely focused on the liberal arts and traditional professions. In these areas, students may not have many opportunities to obtain the skills of the modern administrator. Training programmes must make up for shortcomings in the general education of administrators until the deficiencies in the general educational system are remedied.

The training of middle- and high-level administrators presents special problems. These individuals have already acquired much varied experience. Their need is to keep abreast of new techniques and to receive intellectual stimulation to seek fresh approaches to their work. They are also those who can least afford to be absent from their posts for long periods of time. The types of training adapted to these levels may be seminars, short courses, and inspection trips abroad.

The training of the high-level administrator is the most difficult of all. Perhaps it is even incorrect to speak of "training" high-level administrators. These are men who generally because of their ability have risen to the top of their professions. The need here is largely that the high-level administrator should achieve a proper appreciation of the type of training provided for his subordinates and an awareness of the organizational measures necessary for the full utilization of this type of training.

The final thought that I wish to leave with you is that the basic feedback cycle, which is at the heart of the administrative process, is as fundamental to the training process as it is to the administrative process.

The training of economic administrators to administer economic development programmes has few precedents. New techniques and approaches must be developed which will be effective in each national environment. Mistakes will be made but they need not be repeated time and again. The administration of training programmes can benefit as much from scientific management as industrial programmes themselves.

To summarize briefly, the concept of an industrial economic administrator can be valuable in showing that plans calling for rapid industrialization require a type of government official who possesses a wide range of experience and skills. The economic administrator must at one and the same time possess all the initiative of the private business executive and the breadth of vision of the government official. He must be able to blend administrative efficiency in technical operations with bureaucratic principles of responsibility and political control. In short, his task is to apply the principles that have produced a "revolution" in industrial management methods to bring about a "revolution" in governmental administrative methods. It is recognized that, to achieve rapid economic development in a stagnant economcy, far reaching changes are needed in the social, economic and political structure of a country. It would be strange, indeed, if these basic structural changes did not also require structural changes in government administration. Rapid development requires new methods of administration and a new generation of administrators who will be able to cope with the complex problems of an industrial society. The development of this new generation of administrators presents a challenge which few countries can afford to ignore.

IMPROVING THE TRAINING OF INDUSTRIAL DEVELOPMENT PLANNING ADMINISTRATORS

*by Vidosav Tričković**

A. General background for discussion

Development planning is increasingly becoming the concern of many developing countries. The fact that countries with different political and socio-economic systems not only show interest in economic and social development programmes but also prepare and put into operation comprehensive medium-term plans, as in a number of Asian and African countries, testifies to the role attached to economic planning. This stems from the belief that social and economic development planning, as a method and instrument for overcoming stagnation, backwardness and poverty, provides policy-makers with a consistent and realistic evaluation of all major structural changes in the economy and other social activities needed if substantial increases in all relevant components relating to individual and social welfare are to be achieved, thereby bringing the time horizon of these goals as close as possible.

No doubt, economic and social development planning is a very complex task. It has to draw upon advanced knowledge and experience in many human activities, from economics and other social sciences to technical sciences, from applied technological research to fundamental research, opening new vistas for quantitative and qualitative changes in economic growth processes. It has to rely on experience and knowledge of efficient methods of organizing and integrating various social activities on local, regional and nation-wide levels. Above all, there are differences in the emphasis laid on specific aims and goals which reflect the peculiarities of the institutional frameworks in various countries within which the socio-economic development is shaped. Yet the economic aspects predominate. Planning cannot be exclusively an exercise in the evaluation of alternative policies based on value judgements and qualitative considerations; possible alternative paths of development have to be specified in terms of expected targets with quantitative dimensions and optimum decisions. The alternatives have to be based on economic calculations of total costs and benefits accruing to the population as a whole and its major sectors from the standpoint of geographical or occupational distribution. Viewed from that angle, planning in its broadest sense — formulation and structural balancing of desired pattern of economic growth and social advancement — coupled with a system and methods for its implementation, becomes the most objective testing ground for the validity of both theoretical approaches and methods of quantitative economic analysis, applied in projections of structural interdependence of growing economies.

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The volume of literature on economic planning in developing countries is increasing. There are published documents on medium-term plans of social and economic development for countries with different socio-economic systems and also for the different phases through which the development process in a single country has already passed. Numerous economic publications of United Nations agencies, such as the Economic Commission for Europe (ECE), the Economic Commission for Asia and the Far East (ECAFE), the Economic Commission for Latin America (ECLA), the Food and Agriculture Organization of the United Nations (FAO) and others represent valuable sources of information. They deal with national planning projects and results and problems encountered in various areas of economic and social development projects.

It is only natural that the accumulation of experience and knowledge in this area should have led to a more systematic and comprehensive presentation of the questions and problems encountered in planning as well as of the procedures and methods likely to resolve them. A recently published study of a group of experts, [1] based on experience gained and techniques used in planning economic development in different countries, is the most comprehensive available review of major questions to be resolved in the process of plan formulation and implementation, both in socialist and mixed economies. Among the studies oriented specifically towards resolving practical methodological problems involved in individual and over-all economic projections, two other United Nations studies should be mentioned. [2] All this accumulated literature on various aspects of development planning is a valuable asset when we turn to the important question of training properly qualified personnel for responsible jobs in the complex machinery of planning in developing countries.

It might also appear as though existing knowledge regarding methods and procedures in formulating general development plans, together with the variety of experience gained in the implementation of desired structural changes in national economies, formed a self-sufficient and complete body of knowledge which alone can serve as a basis for training programmes for planning administrators in developing countries. The author's opinion, however, is that additional efforts should be made to meet the actual requirements in ability and capacity of trained personnel to cope efficiently with the complex problems of social and economic development planning.

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[1] *Planning for Economic Development,* Report of the Secretary-General transmitting the study of a Group of Experts (United Nations Publication, New York, 1963).

[2] *Manual on Economic Development Projects* (United Nations publication, Sales No.: 58.II.G.5.). *Studies in Long-Term Economic Projections for the World Economy* (United Nations publication, Sales No.: 64.II.C.2.). There exists, of course, a voluminous literature on economic model-building and econometric models of national economic growth, which we will not go into here.

B. Complexity of the function of planning administrators in developing economies as a basis for discussing training policy

Once the importance of the role of economic planning in developing economies is recognized, the next logical step is to devise the most appropriate system for training administrators and other personnel. As in any other training activity, it is necessary to analyze the efficiency of persons who have completed the training course in dealing with the tasks assigned to them and to feed back into the training system information on their performance, thereby providing a mechanism of continuous improvement in the composition and duration of training programmes.

It should be strongly emphasized that the ability and acquired qualifications of analysts and decision-making administrators engaged directly in solving development planning problems are of key importance. Unless the responsible authorities concern themselves seriously with this issue, much of the nation's effort, in terms of human and material resources, may be doomed to failure and the available potentialities for increasing welfare may be considerably reduced. It has to be borne in mind that the performance of former trainees depends primarily on the type and structure of the training system selected. The closer that system corresponds to the variety of problem-solving situations with which former trainees will be faced, the better performance (on the average) can be expected.

No one would dispute the thoroughness and severity of the training courses required before a person may engage, say, as an engineer in construction work. Although planners are not expected to work on over-all economic projections or projections of economic sectors or branches with the precision of a construction engineer, the reduction of errors in development planning is of paramount importance. Planning errors are not immediately apparent. Because of the complexity of interrelated economic flows, as well as the presence of external forces outside the planners' control, such errors may be greatly underestimated. Yet their magnitude and significance may greatly exceed the results of a miscalculation by a construction engineer. On the other hand, the nature of the problems with which economic and social planners have to deal must entail a definite margin of error. The more distant the planning time-horizon, the more likely it is to entail a large margin of error, and the narrower the subject matter of long-term planning, the larger the margin of error is likely to be. The further advancement of economics as a science will contribute to the improvement of the methodology and strategy of planning and thus to a reduction of losses attributable to the presently insufficiently developed areas of theoretical and applied economics. Nevertheless, failures due to economic miscalculations represent a waste of national resources, and developing countries should give first priority to reducing such miscalculations to a minimum.

The urgency of this problem has been recognized. In dealing with standards of investment projects originating in developing countries, the authors of the *Manual* felt it necessary to point out that "substantial losses are constantly being registered both in the public and in the private sectors because the best available method of attaining a given production target is not selected or because a plan is embarked upon which should never have passed beyond the study phase.... Such shortcomings may be due largely to the fact that what constitutes a good investment project study is not always clearly understood, and to the shortage of trained personnel qualified to organize, direct or inspire the required studies".[3] Although the training courses organized for economists and engineers on the subjects treated in the *Manual*, which appeared in 1958, have helped diminish errors in particular project evaluations in countries where some of the planners have received special training, this statement is still valid for those situations where courses are lacking or incompletely organized. Moreover, it serves as a warning that responsible planning administrators whose work on the evaluation of competing alternatives in macro-economic planning is extremely subtle and delicate, should be given correspondingly thorough training.

In connexion with the efficient design and organization of the training system for planning administrators, one salient feature requires definition. It has already been mentioned that the quality of performance of former trainees depends basically on the quality of the training system itself. Yet there is a wide difference between an educational and training system in well-established areas of human activities, such as the technical sciences, and the system of comprehensive social and economic planning. Planning as a science is so recent a development that we may freely talk of an area in which pioneering efforts are required and well-balanced methods have still to be worked out. The establishment of adequate training systems and facilities in economic and social planning is so important that it should be borne in mind in all discussions on this subject.

In technical sciences, the demand for new subjects to be taught at graduate or postgraduate levels, and the need for new types of laboratory and experimental work, stem from requirements imposed by the introduction of new technologies or the advancement of existing ones. But these extensions and novelties in high-level teaching and training programmes are only additions to the already well-established pattern. Even more technical subjects, such as methods of quantitative economic research based on achievements in the fields of statistics and econometrics, cannot be properly taught without due attention to institutional differences among individual countries; such differences may greatly influence and even completely rule out their unqualified application.

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[3] *Manual on Economic Development Projects* (United Nations publication, Sales No.: 58.II.G.5), p. xiii.

Planning methods and procedures and, consequently, the whole structure of training systems are greatly influenced by the major characteristics of the respective socio-economic systems of the countries concerned. However, this institutional framework is not unchangeable. The highly centralized mechanism of economic planning in socialist countries has a definite and very explicit impact on the ways and means of resolving the problems facing economic and social planners. On the other hand, the decentralization of the decision-making process and the transfer of decision-making power in relevant matters to working collectives, together with the appropriate exploitation of market mechanisms, constitute a somewhat different type of planning methods which develop and improve as necessary experience is gained. Nor should the introduction of the market mechanism in a socialist economy be regarded as a simple duplication of research methods which are successfully applied in private enterprise economies. In developing mixed economies with various degrees of public ownership, in different sectors of the economy, and at various development stages and organizational patterns of economic and social life, there is a variety of environments demanding specific approaches and strategies for development planning. Yet problems of economic development have many features which are common to all developing countries, whatever their institutional characteristics. It is necessary first to concentrate on them. A brief review of the essentials of comprehensive planning provides a logical basis for an answer to the subtler question of how to improve the efficiency of a training system.

One further point should be mentioned. Different time-horizons for planing may have different effects on the approaches to socio-economic planning. It is widely recognized that long-term economic development plans provide the necessary framework within which more detailed medium-term projections and selections of priority projects and processes of growth in particular sectors can be worked out. However, few attempts have been made in this direction so far, and the experience with both the methodological aspects of designing such plans and their implementation is far from being sufficient to warrant generalized conclusions. Hence it is important to emphasize practical work on these projects in developing countries in addition to independent research work, which has already begun and has resulted in an extremely interesting methodological study under United Nations auspices.[4]

In summarizing the essential steps in planning procedures and in discussing some of the problems which more sharply delineate the required educational profile of planning personnel, we shall draw mainly on medium-term planning problems — an area much more familiar both because a number of countries have attempted this type of planning and because the results have been made known through various published documents.

Planning procedures may conveniently be grouped under the four following headings: (*a*) evaluation and critical appraisal of the results of past developments and structural changes accomplished in relation to the degree of utilization of human, material and other available potential; (*b*) formulation of basic economic development policies which would lead to an accelerated national income growth as well as of policies reflecting the main goals of concomitant social development; (*c*) application of general socio-economic guidelines to consistently interrelated, i.e., structurally balanced rates of growth of major sectors and sub-sectors of the economy and social service activities; (*d*) selection of measures and instruments for implementing a selected pattern of socio-economic development, and finally (*e*) organization of a network of institutions and provision of the necessary organizational and legal framework to carry out various socio-economic functions.

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[4] See footnote 2 above.

The search for adequate approaches in resolving the questions and problems encountered at each of the above stages imposes high quantitative and qualitative demands on the education and experience of the planning administrators concerned. It is the responsibility of such personnel to work out detailed economic analyses and provide a sound and firm basis for final decisions whenever the anticipated outcome of alternative approaches is clearly discernible on economic grounds and when they lend themselves easily to priority ranking. Often the lack of persuasive argument or, more specifically, of measurement and evaluation of complex effects, on a nation-wide level, of investment in alternative key projects, in terms of rise of national income, employment, over-all economic productivity, etc., leads to wrong policy decisions and, consequently, to the inefficient utilization of available potential.

The role of responsible planning administrators in providing economically sound and coherent arguments that should serve as a basis for the adoption of key decisions concerning structural changes in the national economy is particularly significant and has far-reaching consequences. If the primary objective of developing countries is to bring about structural changes that would permit the optimum utilization of their available resources — and, in truth, this seems to be the natural preference of the population of those countries — the basic methodological procedure must differ from the one most often referred to in literature on growth problems of economically advanced countries. Selecting the most adequate pattern of economic development and, more particularly, the pattern of industrial production and orientation which would permit the most rapid economic growth, is the most crucial issue. Methodological approaches for projections of possible growth rates of the economy as a whole, and its main sectors, are subject to change. This change makes the tasks to be performed by planning administrators and expert analysts more complex. The parameters, such as capital coefficients or technological coefficients in input-output tables, cease to be reliable factors in estimating the future interdependencies among sectors in a growing national economy. In this case, planners have to study the macro-economic effects of various alternative key economic projects, and this often requires the comprehensive elaboration of the advantages in relation to foreign markets. Moreover, close and well-organized co-operation is necessary among technical experts and scientific research workers in the relevant area of technoloty. They should supply information not only on the best size, location, etc., of the projects, but also on the trends in expected technological development and in educational and training policy; the latter is indispensable in providing the required qualified personnel structure, ranging from skilled technicians to purely scientific research workers.

Only in so complex a way can macro-calculations of costs and benefits create a reliable basis for the selection of priorities, and provide guidelines for the synchronization of organizational and other measures, short of which the selected sectors or industries cannot become a real moving force in an accelerated over-all economic growth. Consequently, the formulation of an internally consistent plan, aimed at the optimum utilization of resources, demands much more complex and co-ordinated work by specialists in different areas than is usually supposed. As pointed out elsewhere,[5] the general macro-economic model, with fixed parameters based on past experience, is no more than a starting point in a process of successive approximations and more detailed elaboration and balancing, which eventually converges towards that pattern of a country's industrialization which appears most desirable.

Nor can developing countries which plan their economies afford to neglect the selection of the most efficient production pattern on which the national economy is to develop, in the context of conditions under which long-run advantages may be secured. Planners must be the first to appraise and check the advantages of established policies in the light of the results achieved, the accumulation of new data on the country's national resources, and an analysis of modern productivity and technology trends and achievements in economically more developed countries. At a recent international conference devoted to studies of "needs for scientific research and technology in relation to economic growth",[6] strong arguments were advanced in favour of the organization of scientific research both at the level of so-called applied technologies and of fundamental research. The reasoning here is that fundamental technological research fosters the development of a healthy scientific community with first-class scientific personnel, and that without such personnel, developing countries are doomed to long-run dependence on technically more advanced countries and to the need to import know-how from abroad.

For the sake of illustration, we might point further to some other areas in which complex analytical approaches are called for: (*a*) policies for the development of social services, which must be viewed from a dual perspective, since such services are both the cause and the consequence of economic growth; (*b*) methodological problems resulting from the inability of market prices adequately to reflect the social viability of alternative development projects — a phenomenon encountered particularly in less-developed economies; (*c*) difficulties in forecasting supply and demand relationships in individual markets and in the estimation of future price levels and rations in cases where the whole economy is exposed to substantial structural changes (for even where historical statistical data exist, they can be of little use, because the estimation of new parameters — income elasticities, domestic prices and substitution price elasticities etc. — cannot be satsifactorily determined merely through sampling, no matter how well designed and organized); (*d*) evaluation of measures and instruments of economic policy aimed at influencing decision-making at micro-levels in accordance with nation-wide selected patterns of socio-economic development, particularly in view of the heterogeneity of motivational forces governing the behaviour of various groups of agents, some of which are characterized by traditional and deeply-rooted conservatism, coupled with inconsistent or irrational reactions to market and other stimuli, etc.

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[5] V. Tričković and B. Kubović, *National and Regional Planning in Yugoslavia,* Federal Bureau of Economic Planning, Department of Economic Research and Methodology of Planning, Belgrade, 1961.

[6] Paris, 28 September to 1 October 1964, arranged by the Organization for Economic Co-operation and Development.

C. Some suggestions for the organization and adjustment of education and training of planning administrators in developing countries

In the foregoing paragraphs, we have tried to emphasize, very briefly, some important aspects of the planning administrators' role in developing economies. If these aspects are not fully appreciated, an intellectual framework is likely to develop within which it will be very hard either to develop an efficient training system for development planners, or to build a mechanism for changing and adapting existing training systems to the needs imposed by social and economic development. From the discussion so far, a relevant framework emerges, the most essential logical component of which might be summarized as follows: the activity that planning administrators have to carry out in developing economies must not be regarded as routine; on the contrary, it is a clear example of highly creative work which will be able to produce desired results if the training system is properly designed and organized. Here, obviously, we are concerned with planners who have been assigned particularly responsible tasks, either in the capacity of economic analysts working on analyses and projections of quantitative relationships characteristic of individual sectors and industries, or in the capacity of chief planners and co-ordinators of complex studies involving the co-operation of experts in related areas.

In section A of this paper we refer to the increased volume of literature on planning, which undoubtedly makes a valuable contribution to the existing body of knowledge on social and economic development planning. However, given the complexity and variety of situations characterized by specific features, not only when different countries at similar stages of socio-economic development are compared, but also when various successive phases of development in the same country are considered, we cannot speak of a body of knowledge which forms a self-sufficient basis for training. Planning, under such a variety of conditions, is obviously still in its initial stages, and the experience of individual countries will add much to a more objective appreciation of the efficiency of various planning methods and techniques, as well as of organizational and institutional features characterizing different approaches to the ultimate goal of rapid economic and social development.

The known techniques employed in collecting statistical information on the derivation of various behavioural parameters (measurement of responsiveness of economic agents to changes in market conditions, supply of credit or other financial policy instruments) in economically more advanced economies may be quite inappropriate if applied under different conditions in developing economies. For example, the solution of the most vital issues of developing economies, such as increasing the savings ratio of the economy, requires new approaches based upon well thought-out and co-ordinated policy measures and institutional adjustment. In this sense, responsible planning administrators of developing economies, through their carefully elaborated studies and projections, must function creatively in making the appropriate national development policy decisions and contributing to the theory and practice of development planning, which extends beyond national frontiers.[7]

It is now not difficult to envisage the educational and training background which planning administrators must possess in order to meet the requirements referred to above. It appears almost as a condition *sine qua non* that training should be considered a process of study in which all subsequent stages lead to higher degrees of specialization in social and economic development planning. Selected graduates in economics and other related subjects would benefit from exhaustive and well balanced courses at the post-graduate level. We cannot presently deal with details of organization and curricula – this subject has to be treated separately – and we shall merely emphasize some features of these courses that are relevant to the subject under discussion.

(*a*) Courses are most appropriately organized within the framework of a two-year curriculum set up on a trimester basis. The teaching may extend over the first four terms while the last two terms are left for writing master degree theses in selected areas of development planning.

(*b*) Postgraduate schools may be located in such a way as to serve the needs of highly qualified planning administrators in several countries, i.e., they may be organized as regional international schools, thus making it easier to overcome language problems.

(*c*) Particular attention should be given to the selection of candidates. Entrance examinations in subjects such as general economics, mathematics and statistics are prerequisites for attaining high teaching standards. Wide discrepancies in candidates' educational backgrounds, particularly in the more technical subjects, are bound to reduce the quality of teaching. When this happens, instead of a smaller number of former trainees able to develop into first-class planning administrators and expert analysts for development programming in various social and economic activities, we have a larger number of planning administrators who, as a rule, cannot efficiently cope with the variety of problems that occur in their practical work.

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[7] In the *Manual on Economic Development Projects* (United Nations publication, Sales No.64.II.G.5) p. xiv, the authors have drawn attention to what they have rightly considered important attributes of a good planner of industrial development projects. "This manual", they say, "presents certain standards, theories, cases, examples and explanations of the method of preparing projects, but the most important part of a study will always be the contribution of those who carry it out. This is true not only because the subject is too vast and complex to permit of precise and invariable standards, but also because it is impossible to foresee all the local circumstances which might affect a particular project; some flexibility is essential in applying the general standards laid down in the manual. The preparation and presentation of a project must of necessity be the personal creative work of its authors, rather than a routine application of formulae and theories".

This brings us to the final question under discussion, the answer to which seems to stem logically from the argument developed so far. The programme of postgraduate teaching will basically determine the skill and ability of former trainees. The adequacy of the whole system of training applied can best be gauged by the success of the socio-economic development programmes resulting from the work of former trainees in their respective countries. This, in turn, implies the need for setting up study groups to deal with the implementation of structural changes and other essential targets fixed in national development programmes. Highly qualified personnel are required to carry out comprehensive analyses of the plan implementation. We see the particular complexity of their task in analyzing the issue related to:

(*a*) the efficiency or correctness of particular methods and techniques for finding required structural parameters;

(*b*) the reliability of statistical data in the light of possible alternative procedures or collecting and estimating;

(*c*) the adequacy and consistency of methods and techniques applied in evaluating priority sectors and areas of socio-economic development;

(*d*) the proper selection and synchronization of implementation measures and organizational forms;

(*e*) the presence of exogenous, unforeseen factors and the degree of their favourable impact upon the country's development;

(*f*) other causes of deviations from basic development targets and anticipated policy measures.

Each of the procedures, techniques and measures mentioned under (*a*) to (*f*) contribute to the final results of planned socio-economic development. We are obviously interested in evaluating their efficiency which, in fact, is an indirect way of assessing both the performance of the high-level planning administrators concerned and the quality of the training they obtained before being assigned to responsible jobs. But individual factors mentioned under (*a*) to (*f*) may enter into a variety of combinations, thus giving a picture of the final outcome of planned development over the period under review. Therefore it is often difficult to discern precisely the contribution of each factor. Errors made in estimating basic statistical data, in balancing structural interdependencies among major economic sectors or in arriving at economically unjustified industrial investment decisions, may coincide with unforeseen high outputs in the agricultural sector (due to very favourable weather conditions). An unplanned development of this kind, by increasing domestic purchasing power as well as by easing the foreign exchange problem and increasing the import capacity of the economy, may contribute considerably to over-all economic efficiency. It thus offsets economic miscalculations or misallocations in the programme of socio-economic development. If, on the other hand, agricultural output is low because of unfavourable weather conditions, as is frequently the case in developing economies, too large a proportion of deviations from planned or anticipated socio-economic development targets may be ascribed to exogenous, uncontrolled factors. This again implies underestimation of actual errors.

The evaluation of the adequacy of methods and techniques employed in drafting development plans, as well as of the efficiency of measures and organizational forms resorted to in implementing desired structural changes, requires highly qualified economists working under congenial research-oriented conditions and not employed in routine jobs. The results of their studies in individual developing countries should be a source of extremely valuable information for the continuous correction and adjustment of training programmes designed for high-level planning administrators.

Obviously the study of the interrelationships among the various factors which have produced a definite pattern of socio-economic changes and the measurement of the efficiency of each of them taken separately is a task which cannot be successfully carried out unless a sufficiently long period has elapsed. That is why this type of research should be part of a more complex research activity on problems of socio-economic development planning. In our opinion, the introduction of an efficient feedback system in the training of planning administrators for highly responsible jobs requires the establishment of research sections or groups within the country's basic planning administration organization. Research work can then be organized in all areas pertaining to the advancement of planning strategy and methodology, such as (*a*) building an integrated system of statistical information to meet demands for projections and structural balances in planning; (*b*) working out models for over-all and sectoral projections of economic growth that would best fit the institutional and other characteristics of a growing national economy; (*c*) carrying out more elaborate studies that estimate structural parameters needed for various projections (of consumer demand, export-import demand) and many others.

Planning administrators are in danger of being so much involved in routine work that very few comprehensive studies on the topics referred to can be successfully carried out. In fact, unless a separate unit is established in which research is organized on an independent basis, it would appear difficult to combat that danger. On the other hand, a research unit cannot produce desirable results without close co-operation with other planners. Such co-operation will undoubtedly induce interest in research and study as an indispensable method of resolving complex problems encountered in planning. Finally, such an organizational pattern seems to be most conducive to the transformation of the basic administrative planning body into a planning research institute proper — an organization which would be able to turn out alternative draft plans based on the results of carefully planned and worked out studies in relevant areas.

To speed up this transformation – we assume that little doubt of its desirability exists – a research unit should engage intensively in training top-level administrative personnel as well as research workers for planning. We believe that those who have studied the relevancy of various methodological approaches with successful results are most competent to influence the training of qualified planning personnel. This provides the most direct and efficient means of checking the performance of former trainees and feeding it back to correct and improve training programmes and the training system as a whole.

In co-operation with universities and with some foreign aid for the teaching staff, the research departments of the planning bodies may organize two-year postgraduate courses of the type that we have already described. In a few years, and depending on the success with which fundamental research in matters of economic planning has developed, research departments may develop into independent scientific research institutes, with their staff engaged both in research and teaching.[8]

These institutes may also become regional international research and training centres which could then offer valuable assistance in establishing research groups within national planning bodies as well as local training courses for technical planning personnel. As international training and research centres, they should organize advanced level seminars for planning administrators and research workers who have accumulated experience in planning. In these seminars, new techniques and approaches or amendments to the existing ones should be presented. In addition, scientific research conferences on planning could disseminate the latest developments in the theory and practice of planning.

We may conclude by stressing once again that properly organized research on problems related to socio-economic development planning in the countries concerned is of key importance for building an efficient feedback mechanism in the training system for high-level planning administrators.

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[8] A similar development has taken place in the Yugoslav Institute of Economic Research. The Institute originated from the Department for Economic Research and Methodology of Planning established within the Federal Planning Bureau. A small research staff engages in various projects dealing with questions of planning methodology or medium-term plan projections (e.g. simplified general model of medium-term economic plan; projections of consumer demand); it also produced a first tentative projection of the country's long-term economic development. In the course of four years, the department expanded so much that it was possible to develop an independent research institute. Since its establishment some two years ago, the Institute has undertaken, in addition to research on development planning problems, a two-year course in economic analysis and planning leading to an M.A. A year later two additional courses were added on econometrics and mathematical statistics. All students, including foreign ones, are admitted on a selective basis. Teaching staff and assistance are provided by the Institute's research staff. Foreign teachers participate, particularly for the more technical subjects, but they are being gradually replaced by nationals.

LEVEL, DURATION AND LOCATION OF TRAINING PROGRAMMES

by P. Borel[*]

A. Level and duration

The answers to the three questions we have to consider will depend on the decision we take on one basic issue: what importance do we attach to training for industrialization, and what efforts are we prepared to make?

Faced with the present situation, which is virtually a blank page, some of us think that it would be an important step forward to send a few specialists to Europe or the United States for training. Others, on the contrary, may feel that the effort should, from the outset, be as intensive as certain conditions — which we shall consider later – allow, and they therefore propose the simultaneous establishment of long, specialized programmes in Europe: long, more comprehensive programmes in the developing countries and short programmes in many different places. Similarly, they would establish not one level, but several, so that the industrialization approach may speedily penetrate the country's decision-making centres.

It may be appropriate to recall, in this connexion, Jean Monnet's observation that modernization is not a material state, but a state of mind. The level of industrial development of our respective countries will thus influence our attitudes; but can a definite correlation be established between the level of development and training needs? There is some doubt on this score. Indeed, it is perhaps in those countries where industry has only just begun to develop, where the private sector still lacks resources and where there is virtually no industry save that constituted by a few foreign companies, that the State must play its role in the most direct manner by intervening, and hence must possess ample cadres of industrial economic administrators.

Consequently, the first question to be taken up at this meeting should, in my opinion, be a very general one, namely: what importance should be attributed to the training of industrial economic administrators, and what efforts should be made in this field? Is it preferable to proceed cautiously, by stages, or should large-scale training be undertaken? What is the relation between a country's present level of industrialization and its need for such administrators?

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A second stage in the study of the problem would then be to try to assess quantitatively the needs to be met and the available resources in personnel suitable for training. We might envisage a double-entry table for each country as follows:

Personnel to be trained / Personnel available

Body	*Top priority*		*+ 3 years*		*+ 6 years*	
	T	*A*	*T*	*A*	*T*	*A*
Ministry of Planning						
Ministry of Industry..............						
Public enterprises						
Development bank and finance corporations ...						
Ministry of Power						
Ministry of Transport						
Regional bodies....................						
Ministry of Finance..............						
Tax Department..................						
Customs Department...........						
Domestic price control						
Development companies						
....						
....						

The number of personnel to be trained would be inserted in column T, and the number of personnel available for such training in column A. The list of bodies to be provided with such personnel will vary greatly according to the extent to which training of this nature is considered useful for their administrators and thus, basically, according to whether the industrialization process is conceived as spontaneous, government-oriented or government-induced.

Once the needs that have to be satisfied have been ascertained, it will be necessary to determine the level of training to be provided. This can be done on the basis of a description of the levels of responsibility involved. Similarly, the duration of the training programme may be deduced from the amount of new knowledge which the administrator must acquire in order to play his allotted role in industrialization policy. A comparison of the training requirements column and the availability column will then lead to a review of training policy. If an insufficient number of highly trained individuals is available, it will be necessary to compromize as regards the level of training required for admission to the institutes. It may be found, for example, that the number of individuals qualified for such training is very limited and that they cannot be released from their current duties for a long period. In this case, a short training programme will be selected.

We shall return to these questions later; for the present, we may simply recognize that we possess very little information concerning the extent and nature of the needs to be satisfied and the personnel resources available. We may perhaps decide that a study of these questions would be useful. Pending the possible collection of these data, I should like to furnish some related information: it will be necessary to train 400,000 engineers in the developing countries during the next fifteen years. If a ratio between the number of engineers and the number of industrial economic administrators were available, it would be possible to deduce total needs; for example, if the ratio were 5 to 100 this would give a figure of 2,000. It should be possible to calculate such a ratio from the statistics of countries which have a dynamic industrial policy; international comparisons in this regard would be most interesting.

If we agree on this balancing method, it might be advisable at this stage to return to the basic problem and consider what may happen if — having recognized that industrialization is an absolute necessity, that factories are not established spontaneously (except in countries which were industrialized long ago) and that someone must prepare the ground, provide the seed, and protect it during its early years — we are unable to find an adequate solution.

(a) *Effects as regards projects*

(i) The lack of viable projects will persist. Consequently, financial absorption capacity will not increase and funds will be diverted to less productive, less multiplicative and less urgent uses. As a result of inefficient techniques and despite the lack of satisfactory projects, much time and money will continue to be wasted in improperly oriented research.

(ii) Similarly, detailed study and comparison of projects, and examination of their execution and financing will be carried out as before in a cursory fashion, without variants, without prior exploration of the difficulties that will be encountered in implementation, and without taking adequate steps to ensure that the projects play a positive role in the harmonious development of agriculture, urban life, vocational training and the general level of living of the community.

(iii) The correct method of obtaining sound projects is not to entrust their planning to a single bureau, but to educate the offices of ministries and other bodies in economic matters. This cannot be done without adequate numbers of specialized personnel..

(iv) The selection of projects will always be challenged and will be difficult to impose if it is entrusted to a small group of administrators whose evaluation methods are not understood by the project formulators. The latter will not have much difficulty in overcoming opposition, as a rule, by relying on department heads who themselves know nothing of the principles of correct evaluation.

(v) For the execution of projects, the Government cannot place itself entirely in the hands of foreign or local engineering and public works firms; it must be in a position to supervise the latter's work, but it will not be able to do this if it lacks specialized personnel.

(vi) The Government's role in the implementation of medium-scale projects and the establishment of small industries is even more essential, and cannot be performed by others.

(b) *Effects as regards industrial policy*

Furthermore, as regards industrial policy generally, the requirement is to provide basic training for a large number of officials. It will be necessary for the Government:

(i) To abandon its legalistic and formalistic approach and adopt instead a dynamic attitude towards industrialization.

(ii) To know the indirect effects of all measures it takes relating to industry: wages, prices, custom duties, credit terms, taxes, corporation law, etc.

(iii) To acquire a language that will permit a constructive dialogue with private entrepreneurs.

(iv) In certain sectors, or when private initiative is lacking, to fill the gap by playing the role of entrepreneur itself, either alone or jointly with private business.

It will thus be seen that many administrators at different levels must be reached by the industrialization programmes. On the basis of the information which you have, you will therefore have to assess the situation in your respective countries and give your views regarding the urgency of the need to spread a new attitude towards industrialization and new industrialization methods throughout government and business circles. I am inclined to believe that there are still many countries where industrialization methods as such have never been disseminated or taught, where totally erroneous ideas are held regarding the requirements for rapid development of industries, and where investment capacity is unwisely employed. I therefore feel that the level of training should be fixed at the minimum commensurate with the need to reach the largest possible number of decision-makers.

There is naturally a greater need for industrial administrators in countries conscious of the need for more precise and dynamic planning. It is not enough to make projections and draw up plans; what is necessary above all is to discuss them and explain them. In the area of industrial planning, contacts between the administration and public and private enterprises take a great deal of time. They cannot otherwise be successful, however, and here again I would refer to Jean Monnet, the formulator of the first French plans, who believes that the essential point is to explain things to people, since people know how to do, and do in fact accomplish, things which have been made clear to them.. To ensure that all participate, it is necessary to persuade people to work together and to do for themselves the things they know how to do better than anyone else.

In the area of industrial policy and in the preparation of projects there would seem to be many simple things which people could do if they were explained to them. For this reason we might favour, initially, a relatively low level and programmes of short duration. However, the satisfaction of present needs should not conceal the requirement that future needs be satisfied also; consequently, long training programmes for a smaller number of individuals, covering the most difficult areas of the mathematics of industrial planning, will also be necessary, whether they are conducted locally or in an industrialized country, a point we shall discuss later.

Here I should mention a related matter: after the estimation of needs and of potential resources in trained economists, there is a third consideration which should not be overlooked, namely, the number of instructors who can be recruited for the training programmes. It might be desirable for the Working Party to look into that problem.

Lastly, I should like to complete my exposition by drawing attention to three areas of current concern, three partly new fields where the need for administrators of the type under consideration is most acute. I refer to the development of small industries, the reconversion of foreign trade, and regional integration.

Small industries are neglected in a department concerned with projects when they are in competition with large-scale industry. This is natural and in some ways justified. However, the role of small industries in industrial development cannot be measured in terms of their modest gross product. They constitute a breeding ground for indigenous entrepreneurs; they foster the propensity to save and mobilize investment capacity; they utilize limited resources; they make decentralization and rational territorial development possible, and the labour costs involved are not as high as those for large industries. One of the causes of the present retardation of industrial development is doubtless the fact that for some years small industries have been lagging behind large industries. Any accentuation of this situation would have serious consequences.

The reconversion of the foreign trade of the developing countries means gradually replacing their exports of raw materials by exports of manufactures. In order to do this, they must be able to produce at internationally competitive prices and to conquer foreign markets. These are difficult tasks, which cannot be accomplished if the number of economists available is barely adequate to handle current, immediately viable projects involving import-substitution industries. This point was of course the subject of one of the basic recommendations of the United Nations Conference on Trade and Development.

In conclusion, let us consider the problem of regional integration. Latin America, Central America, Africa, and the Far East are the regions having the greatest interest in a solution to this problem, which some consider essential for rapid and sustained development. While the regional institutions which are being established need industrial economists, studies are at present delayed by the fact that the countries concerned lack the personnel capable of undertaking essential branch and product studies. Since these, again, are long-term studies, this will continue to be a neglected area if the shortage of economists persists. These are three additional arguments in favour of approaching the problem of level, duration and location from the broadest and boldest standpoint possible.

We may now consider these general points in more detail by examining successively the two levels of training proposed in the Working Party's preliminary document. First let us consider the higher level administrator, who is called upon to take very important decisions covering a broad field. The existing institutes such as CETREDE (Brazil), the Latin American Institute for Economic and Social Planning (Chile), and IRFED, or *Institut international de recherches et de formation en vue du développement harmonisé* (International Research and Training Institute for Harmonious Development) (Paris), have generally opted for six-, eight- or ten-month programmes and have made possession of a university diploma a requirement for admission. However, the Department of Social Studies of the University of Leeds, which offers a one-year course, does not insist upon a diploma, but requires that candidates should possess sound professional experience. It would seem, therefore, that one year of study is the necessary minimum, although opinions may vary as to the need for a diploma.

A university diploma may be deemed useful from two standpoints:

(*a*) As proof that the candidate possesses a certain intellectual ability and is capable of mastering a complex field and analyzing the problems involved; here the type of diploma is almost irrelevant.

(*b*) As proof that the candidate possesses certain basic knowledge which he could not acquire in an accelerated course: for example, political economy, mathematics or industrial technology. We shall return to this point later. It should be noted, however, that the value of a diploma cannot be appreciated *in abstracto*; it will depend, to a considerable extent, on the authority which grants the diploma. This may be the reason why some training institutes attach so little importance to such documents. Moreover, certain institutes may tend to attach more importance to the candidate's experience and present position than to his diplomas. The psychological profile of the administrator we have in mind is not that of the teacher or the research worker: an understanding of human beings, an intuitive grasp of business strategy and a desire to get things done rapidly and correctly are perhaps more essential to his efficiency than intellectual qualities *stricto sensu*..

We could therefore have a most useful debate on the question of diplomas and the psychological profile of the individual destined by the administration for these industrial duties, for the subject is not a simple one. For example, what would be the reaction to the suggestion that diploma qualifications should be supplemented by psychological tests? And in that case, what aptitudes should be tested?

I should now like to turn to the subject of mathematics, political economy and industrial technology. Mathematics and political economy are basic sciences which, we feel, usually makes them unsuitable subjects for intensive training. However, engineers, geographers and town-planners whose secondary education has provided an introduction to political economy are capable of learning the rudiments of the subject in one year. Similarly, the duties of government officials in economic departments give them an understanding of economic matters which may well make up for their lack of formal knowledge.

We believe, therefore, that mathematics constitutes the most difficult problem. I hope that the discussion which is to take place will provide an opportunity for us to learn from the experience of others in this sphere. In my view, there would be no great disadvantage in keeping at quite a low mathematical level the courses we have to provide, but the subject demands a certain attitude of mind, and an aptitude for mathematical operations, which are not developed overnight. The training of the engineer-economist definitely calls for a major effort on the part of those accustomed only to pure mathematics; and those not versed in mathematical calculation will find this effort too much for them. This is clearly a field for which teaching methods will have to be devised and teaching materials designed. I hope that the Working Party will be able to provide much needed information on this point. These considerations also apply, of course, to intensive instruction in economics for engineers.

I should like to comment at this point on the usefulness of the case study method in political economy. I have no knowledge of this type of teaching myself but it seems to me that for experienced men whose minds have become unreceptive to abstract theorizing — as is often the case — the case study method is entirely appropriate. Does this not represent a gap and a problem and might not the courses given in business training institutes be a useful beginning? The inadequate mathematical background of these economic technicians will usually restrict them to the mathematical standard of intermediate level business and management training colleges. Is this standard high enough? That is a question which we shall have to discuss.

Finally, let us consider what preliminary knowledge of industry the candidates should have. What is needed is a knowledge of industrial science and technology. By this I mean a knowledge of the production processes, product marketing methods and basic techniques of various industries.

The cement industry and clothing manufacture, the sugar industry and the assembly of electrical equipment, for instance, differ not only in their end product and in the raw materials used but also in the relative importance of their factors of production, technical input, financial problems, labour, etc. In other words, there are certainly as many differences between industries as between the different types of agriculture. It will have been noticed, I am sure, how much agronomists resent agricultural planning carried out by anyone but themselves. The Ministry of Rural Affairs is their domain; how many engineers are there in the Ministry of Industry? It seems that rural circles have always been able to persuade us that they are a separate kingdom and that only those born or brought up in it can perceive, interpret and act in that kingdom. Nothing similar exists in industry, where we have long seen and still see the private financier become manager and the public finance expert take part in the direction and transformation of the industrial sector. Moreover, while there exists a discipline known as rural economics or husbandry, its counterpart, "industrial economics", has not yet been evolved; it is generally considered a branch of general economics. We cannot enlarge at this stage, however, on the question of the desirability of stimulating the establishment of this science, various elements of which can be recognized in input-output analysis, the theory of industrial complexes, studies of industrial growth, the theory of industrial investment, the theory of industry location, etc.

The first question to decide is whether only engineers are qualified to study industrial questions. I am inclined to believe that this is not so, although I would endo the view that these are specifically industrial problems. The fact that we constantly handle industrial objects does not give us any more than a superficial knowledge of them and I have noticed that such everyday articles as a box of matches or a bicycle evokes in most students' minds only a hazy idea of how they were manufactured or even marketed. What then could they be expected to know of machinery and plant manufacture and the basic industries? On the other hand, an engineer may, at the end of his studies, be completely ignorant of the mentality of the investor and the industrialist. Consequently, one common feature of the training to be given to both must undoubtedly be the sociology of the world of industry, but in order to learn industrial economics the geographer or economics graduate has to make a special effort. With this proviso, I would favour admitting them to the courses we are planning.

More detailed consideration of the proposed duration of this longer course necessarily involves an examination of the pedagogic problems which are, I understand, to be dealt with in later discussions. The students are required to assimilate rapidly information in very different fields: taxation, law, economic mathematics, statistics, social questions, etc. For the best of them, this may represent an introduction to a fuller training in one of these subjects and the mastery of a synthetic approach which enables them to see all the implications of industrial development for the economic, social and political life of the country as a whole. Do they, in fact, gain the ability, in the words of the preliminary document, "to analyze complex industrial engineering, socio-economic and political situations" in order to make rational decisions? They may, but only after their theoretical knowledge has been broadened by experience.

Consequently, courses intended to bridge the gap between instruction and practice appear to be an unavoidable necessity; the average duration of eight months which has been agreed on accordingly needs to be increased by four to six months in order to take account of this fact. For the less talented, on the other hand, such training in synthetic method is clearly doomed to failure. This brings us back to the problem of the enrolment standards and critera. Should there not be an entrance examination in all cases? The difficulty of organizing this, in many cases, is well known. Would it not be to the advantage of the bodies which grant scholarships to co-operate with the training institutes in finding a solution to this problem? We believe that this idea merits consideration.

Once the principle of a long training period for high-level personnel has been accepted, some consideration must be given to the fact that officials holding posts of great responsibility cannot be released by their departments to take the courses. Moreover, if, as has been stated, an industrialization policy involves a great many decision-makers, an in-service introduction to industrial development must be given to as many people as possible. This could take a variety of forms: one-week training schemes, intensive courses, evening courses, etc.

The industrial development training centre should serve as a source of stimulation for industry as a whole. It should not confine itself to one type of teaching but should give all the instruction required to meet the needs of industry; it should thus serve as a meeting-point for government and private business.

This brings us to the question of admitting representatives of private enterprise: big business, the economic press, employers' associations. It is clearly useful to them to gain an insight into how the State views their business and would like it to develop and it is equally useful for the State to have contacts between people from both sectors forged in the classroom. For such candidates, enrolment requirements will be the same as for government officials. Should it perhaps be laid down as a principle that, if possible, each class of students should include a certain proportion of representatives of private enterprise? We feel that it should.

One of the advantages of long courses is that they can be combined with other instruction in economic development; in other words, industrialization can be taught as a specialized subject within a broad course with options. In this way, depending on the institute concerned, industrial economists can be brought into contact with and do the same work as social development personnel, general planning economists, specialists in physical planning, etc. This applies to the Latin American institute referred to earlier (CETREDE) and to IRFED, and it greatly facilitates interdisciplinary study. A further advantage of a long course is that a certificate can be gained; this is important to many students (but of no importance to others).

We now turn to the second type of training, which provides instruction only in the preparation and execution of projects. In principle, this is intended for government officials who do not have to be university graduates. It should be pointed out, however, that the Social Sciences Institute at The Hague (which gives courses on the preparation of industrial development programmes) accepts only persons who have a thorough knowledge of economic planning or possess degrees in applied science (engineering) or business management. This higher standard is probably attributable to the fact that, unlike other programmes, part of the course is devoted to over-all economic planning, and that it leasts four months, whereas the Economic Development Institute course and the Institute for Economic Development and Planning course at Dakar last three months and that of the Indian Institute of Management at Calcutta only two months. There are no entry requirements for these courses.

Even if the courses are limited to project evaluation, we think it would be ill-advised to decide on a duration of less than three months if the students are to be given a sufficient number of projects to discuss. A project must be assigned for study roughly two weeks before it is discussed, and the minimum number of projects is governed by the necessity to study various types of projects in different fields.

B. Location of training institutes

The foregoing remarks would tend to indicate that project evaluation courses should preferably be given locally. The small number of teachers required and the relatively short period of training should permit the use of mobile classes.

In the case of longer training courses, however, several conflicting factors have to be taken into account. On the one hand, care must be taken, wherever possible, to avoid sending engineers or economists to industrial countries where they might be tempted to stay. It is well known that this is a major risk and that Latin America, India and other countries have already suffered substantial losses in this way. On the other hand, training must of necessity be given in an industrial atmosphere. Even where flourishing industries already exist in a developing country, they usually do not constitute a homogeneous whole. There is a predominance of mining industries, in which training is least necessary. Moreover, employment relationships within firms are not always what they should be if the industry is to have a beneficial social influence. Some factories have a remarkably high level of organization and excellent production factors, but others leave much to be desired in this respect; in short, the possible choices for visits and studies are certainly more limited than in industrial countries. Lastly, there is naturally more difficulty in recruiting teachers. However, this is a drawback which I feel might be overcome within a few years. Indeed, many countries already have highly qualified teachers of economics. All that is needed is that they should be able to take refresher courses in Europe or the United States in this – to them – new subject of industrial economics and industrialization policies.

My conclusion is that most long-term courses will have to be established in Europe, the United States or Japan for some years to come. However, these centres should gradually be converted into higher-level training centres, devoting much of their time to research into industrialization methods and strategies. At this level, they would be doing work comparable with current research on such difficult problems as the location of industry and the achievement of balanced growth. Their initial function should gradually be taken over by countries which already have a fairly diversified, relatively strong and sound industry.

C. Summary

The choice between different policies regarding standards of entry, duration and location of courses will depend on whether it is felt that only a limited effort should be made, involving the training of a few specialists; or that a large-scale effort should be made, with the aim of reaching, by various means, the largest possible number of higher-level personnel in the developing countries.

The author believes that a large-scale effort should be made, because it would produce results quickly. On this basis, a quantitative estimate should be made of:

(*a*) the need for training;
(*b*) the number of persons capable of taking such training;
(*c*) the resources in teaching staff.

It is recommended:

(*a*) that a long course of training (six to ten months), covering both industrialization policy and methods, and methods of preparing and evaluating projects, should be established within the framework of over-all planning; for some years to come, such courses can be organized only in a small number of countries which have a powerful and diversified industrial infrastructure;

(*b*) that a short course be established, to be given in developing countries, on the preparation and evaluation of industrial projects.

NATURE, MERITS AND CONTENT OF ACADEMIC AND IN-SERVICE TYPES OF TRAINING PROGRAMMES FOR INDUSTRIAL ECONOMIC ADMINISTRATORS

by David Carney *

A. Training needs of economic administrators

Although this paper does not deal directly with matters of definition and function of economic administrators, it is nevertheless true that some notions concerning these matters underlie any discussion of the nature, merits and content of training programmes for this category of administrators. However these matters of definition and function are resolved, there are certain basic issues on which, it seems, general agreement may exist or ought to exist before the devising of suitable training programmes for this category of administrators can meaningfully and usefully be discussed.

First, regardless of the area in which they operate, administrators are supposed to deal with certain common tasks; for the art of administration is essentially the same everywhere and presumes the exercise of certain basic functions: general organization, short- and long-term planning, decision-making, motivation of a given pattern of operations towards the accepted goals, evaluation of performance by comparison with given goals, and expansion of activities to achieve stated goals more efficiently, or to serve new goals.

Secondly, their areas of activity, rather than their functions, constitute the point of difference between one administrator and another. Consequently, we might say that there is no such thing as an economic administrator or an industrial administrator, but only administrators working in industry, in education, in science, in medicine, in government, and so on.

Thirdly, there must therefore be a certain basic training common to all administrators, regardless of their area of activity, this being merely a matter of orientation of their training and the exercise of their day-to-day functions. In effect, an administrator should be capable of devoting his talent to the solution of administrative problems and the exercise of basic administrative functions in any field of activity, given the expertise required to provide needed information and to translate his decisions into meaningful action in the area in which his talents are employed for the time being.

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These three basic characteristics – uniform nature of the essentials of the administrative function and, therefore, uniform nature of the basic training required, together with a need for flexibility in the application of the training acquired so as to facilitate operation in a wide variety of fields and under a diversity of conditions – constitute and define the role of an administrator, determine the scope and degree of maturity of his experience, and provide the broad outline of an approach to his training requirements.

In discussing and outlining training programmes for administrators one may be reminded of a point of view which is sometimes expressed in the statement that a good administrator is born and not made. The implication of this statement seems clearly to be that formal training is not necessarily required to produce a good administrator. This may be true. However, this should not be taken to mean that training is of no use whatsoever. On the contrary, basic training of administrators may provide the background against which a candidate with a natural talent for administration will more easily discern and take hold of his opportunities. Such opportunities may very well include, not only suitable job openings, but also post-training facilities for putting his talent to work in a variety of practical fields, and for broadening the area of his experience.

As to basic training, it may be said that it is the function of academic training programmes to provide this type of training, which should be common to all types of administrators. The content of such training, which is offered at universities and similar institutions of higher education, consists of courses in systems of administration, organization theory, personnel administration and techniques of financial administration. The benefit derived from training courses of this type is that they help to mould the administrative mind so as to enable it to perceive the broad similarities and differences in the various techniques of administration, and to detect the areas in which problems are often likely to arise. There does not seem to be any substitute for this type of training, and it is essential for all administrators at a very early stage in their career.

Subsequent to this basic academic training, which may be followed by further training, but of a specialized nature, at appropriate institutions, the period of practical orientation in an employment situation begins, in which the administrative function is exercised and the problems peculiar to specialized fields are investigated. Here it becomes a matter of choice based on the job inclination of the candidate. This is the stage at which the distinction between administrators on the basis of their fields of activity, rather than of the administrative function, which is broadly similar in all fields, becomes relevant; so that we have economic (business and industrial) administrators, medical administrators, etc. There are, of course, several fields of specialization open to the practitioner of the science and art of administration, but we are especially concerned with the field of economics, broadly including business, finance and industry.

A variety of institutions offer specialized courses for this type of administrator, but it is best, at the outset, to concentrate on the type and content of courses rather than on the institutions. For once the appropriate type of courses is determined, it becomes only a matter of choice among the various institutions offering such courses.

A distinction is often made, or suggested, between higher-level and middle-level economic administrators, depending on the type of responsibility exercised. The second might be termed a technician, making decisions lower down in the administrative hierarchy; the first operates at or near the top of the hierarchy and takes decisions of a broad policy nature, without undue concern for detail. This distinction is a rough and ready one and perhaps should not be stressed unduly. For it is not really easy to demarcate middle- from higher-level managers or administrators, and it becomes difficult to know how far down the hierarchy to proceed before reaching the lower limit of middle-level management. Indeed, the term "middle-level management" (or "middle management", for short) is frequently so elastic in conception and use, from country to country, as to defy precise definition. It might be better to view the situation as follows: the administrator at the highest level is the pivot around which rotate, as extensions of his personality, specialized staff of various kinds in related economic fields, through whom certain administrative decisions are taken and administrative functions exercised. For once we pass from the distinction between higher-level and lower-level economic administrators to consider what class of administrative functions they exercise, we find that in reality we are dealing with nothing more than high executive functions on the one hand, and staff functions on the other. On this plane of discussion we are dealing with the exercise of complementary administrative functions rather than with the hierarchy of the administrative machinery as such, which latter is what would come readily to mind when the terms "higher-level" and "middle-level" are employed.

Pursuing this line of approach, therefore, we may think in terms of general administrators and staff or technical administrators. Taking the latter first, it is perhaps necessary to add that the administrative function which they exercise is more in the nature of a collective responsibility, based on consultation and hammering out of collective administrative decisions through a process of reconciliation of different specialized points of view. This is a logical extension of the staff function, for it makes clear that the reconciliation of specialized points of view in the decision-making process need not be performed by the general administrator or chief executive, but could be achieved by the specialists themselves meeting together, either with or without the chief executive. In the latter case, they would communicate their collective decisions to him. Some such procedure is increasingly made necessary and is, in fact, adopted as a result of the growing complexity of modern business and industrial administration.

Granted all this, various areas of specialization are open to the technical administrator, but we may select four major areas commonly found in modern business and industrial enterprises: (*a*) economic, (*b*) legal, (*c*) engineering and (*d*) public relations. The precise nature and content of the training programme for these four types of administrators may now be examined.

(a) *Economic.* The different subjects included in this area are the following:

(i) Economic geography;
(ii) Cost accounting;
(iii) Benefit-cost analysis;
(iv) Accounting prices;
(v) Taxation, tariff and investment problems;
(vi) Industrial management;
(vii) Advertising and marketing;
(viii) Labour relations;
(ix) Employee welfare;
(x) Communications;
(xi) Incentive systems – workers (financial and in kind), managers (bonuses, etc.), enterprises (tax schedules, depreciation allowances, etc.).

(b) *Legal.* Here the main interest lies in those branches of law affecting business or industry in regard to:

(i) Taxation;
(ii) Commerce;
(iii) Contract;
(iv) Tort;
(v) Corporate activity;
(vi) Labour and social security.

(c) *Engineering.* The various branches of industrial engineering (chemical, electrical, etc.).

(d) *Public relations.* The interest of the specialist in this area would centre on subjects such as:

(i) Government and business;
(ii) Business and the community (social cost of doing business — community services, assistance to education, community improvement, etc.);
(iii) Industrial psychology;
(iv) Social psychology;
(v) Sociology;
(vi) Public relations: propaganda and advertising, mass communications and persuasion, public opinion and reaction surveys.

The specialists in these areas often have their administrative functions recognized by the creation of posts such as vice-president or other auxiliary managerial posts, in which they assume responsibility for decisions in their respective fields of specialization.

After being oriented through previous training in one or the other of the branches of specialization within their respective fields, these technical administrators may need further training to familiarize them with other branches of specialization in their fields which they had not previously covered; or brief periods of exposure to fields of specialization covered by their colleagues, in order to promote a cross-fertilization of ideas and a general awareness of those other aspects. Short courses of up to a year, in order to acquire additional substantive knowledge in their fields, or brief colloquies examining the interrelation of the various specialized aspects of the administrative function and providing an over-all view of these various aspects, would meet this need for further training.

At this point, it becomes largely indifferent whether such specialized courses and colloquies are termed "academic" or "in-service" training. Very often they have an intensively practical orientation, or they may be conducted by universities or specialized institutes. For an administrator already in the job, it makes very little difference what they are called. The end result is what matters: they represent a broadening of his knowledge or an enlargement of his experience.

The general administrator may need to be kept abreast in certain relevant subjects, including those he may have studied in an earlier academic training course of the type specified above. However, his greatest need would seem to lie in the following areas:

(*a*) Policies and international relations (in order to gain an understanding of the domestic and international political forces which influence government decisions that may affect the climate of business at home and abroad);

(*b*) Recent developments in:

(i) Organization and management (including staff functions, departmentalization of operations, and decentralization of decision-making);

(ii) Organization planning;

(iii) Consultation process (including various committee devices which bring in staff personnel, i.e. technical administrators as well as consultants, at the highest level of decision-making);

(iv) Communication process (including data processing and its effect on the decision-making process and the degree of involvement of various principles therein).

Here again, it is not of great importance who organizes these courses or what they are called. Nor is the relative homogeneity or non-homogeneity of the groups handled in itself an advantage or disadvantage. For non-homogeneity in any institution has the merit of providing a variety of experiences which can be very fruitful to the participants, while at the same time presenting a challenge to the teaching staff to accommodate the training to the various levels and backgrounds of the trainees, expecially the general administrators. In any case, considering the diversity of administrative and employment experiences in business and industry, administrators, including even technical administrators, are probably among the last group of people among whom homogeneity in any particular respect should be expected or sought.

Having thus broadly and briefly specified the nature of the training needs of administrators working in the economic field and exercising different kinds of responsibility, we should now turn to consider the various programmes and facilities which may be devised to meet these needs. We shall first discuss the general organization of these programmes, then pass on to consider those which may be organized at the national and regional levels and, finally, those which may be organized at the international level. At the end of the paper we shall discuss the role to be played by documentation centres.

B. General organization of training programmes

It may be generally agreed that training programmes organized for administrators in business and industry in the developing countries must be broadly conceived to include such personnel from both public and private business and industrial enterprises, thus providing for the diversity of economic and enterprise systems which may exist in those countries. This requirement is, perhaps, readily satisfied at universities but not at government-sponsored regional institutes, which may be committed to training only candidates in the public service, or in the public sector of the economy. Since the problems of industrial development and management, like those of economic development generally, are not confined to the public sector, and since many developing countries also count in large measure on private enterprise and investment for the development of their economies, it follows that countries with a private sector should be able to propose suitable candidates from that sector for training at institutions operating at the national or regional level. This consideration is also one to which the national and regional training institutes established by agencies of the United Nations may wish to give some thought.

C. Training programmes at national and regional levels

We may distinguish between "pre-service" and "in-service" training. The former covers training prior to the start of employment, including basic academic training, which is best given at academic institutions, in the nature of the administrative function, organization theory, personnel management and techniques of financial administration, as well as specialized training in substantive fields. "In-service" training covers training acquired after the start of employment, that is, on the job. However, "in-service" training is not by any means excluded from the range of services so be rendered by academic institutions, although other types of institutional arrangements are likely to figure more prominently in this second stage of training.

In this connexion, we may refer to specialized courses in business administration and industrial management which are also suitable for inclusion in the curricula of university institutions. In addition, there are specialized courses in industrial development, project preparation and analysis, which may be organized by national economic development institutes, or on a regional or subregional basis by such national institutes, or by specially created regional or sub-regional institutes at the request of countries in a given geographical area. The aim of such courses would be to bring knowledge of current events and developments in the respective fields up to date. They would be in the nature of refresher courses lasting up to, say, three months and take the form of seminars, lecture-discussions, work assignments and laboratory (workshop) sessions, depending on the interests of the trainees and their current work experience.

Observation tours for six or twelve weeks in neighbouring or distant countries facing similar administrative problems constitute another type of in-service training. This type of tours has long been sponsored by the United States Agency for International Development, which may be regarded as having set the pattern. Here the participants follow closely a set of problems in the area of the tour and write papers on various aspects of these problems encountered during the tour. Such papers, where appropriate, might be sent on a confidential or restricted basis to interested governments and development institutions in the countries or region from which the participants were selected, in order to augment their collections of case studies and documents on comparative experiences.

These programmes are adaptable equally to technical and general administrators, depending on how they are organized, the level at which they are conducted, the level of personnel encountered and interviewed during tours, as well as the periods for which they are organized. In general, shorter periods of, say, up to six weeks would be suitable for general administrators and longer periods (up to twelve weeks) for technical administrators. These periods bear a general correspondence both to the length of time during which each group can stay away from their desk jobs (considering also that possibilities of temporary substitution among general administrators tend to be fewer than among technical administrators, because of the greater over-all responsibilities of the former), and to the degree of detail which they are normally expected to handle in their daily work and which they would therefore normally be expected to observe and study.

Institutions which may suitably organize such programmes are universities, development banks, development agencies, national and regional training institutions, or some or all of these in collaboration.

D. Training programmes at the international level

The preceding types of programmes are best organized for related groups of countries in an area by national or regional (or sub-regional) institutions, where enlargement and exchange of experiences at this level is the objective in view. However, at the international level, a greater degree of "country mix" may be allowed, for industrial development and administrative problems are very similar in all developing countries. Therefore, at the highest level of administration, that of the non-technical general administrator, there could be much profit in bringing together administrators from developing countries in different parts of the world under international (as distinct from regional) auspices.

Training programmes at the international level for general administrators may be so organized by international or bilateral agencies, and the shorter the period the better for all concerned. Such programmes, which would probably not extend beyond a week or so, may best take the form of general seminars, a "think tank" or "brains trust", in which the major objective is not only to share experiences and information but to devise fresh approaches to, and points of view on, common problems. Similar arrangements might conceivably be made for technical administrators, although for reasons of convenience and other factors, including the very short period of time (possibly reckoned in terms of days) which may be involved, it is easier to envisage this type of arrangement for the general administrator.

Suitable candidate organizations for this type of programme are the Industrial Development Centre of the United Nations, the Economic Development Institute in Washington and the International Bank for Reconstruction and Development and the International Monetary Fund. However, regional organizations such as the Organization for Economic Co-operation and Development may usefully collaborate with such international organs.

E. Reflections on the nature and merits of existing local training programmes

At this point one may pause, appropriately, to make a few observations on the nature and merits of existing local training programmes for administrators in developing countries, but with special reference to the African situation. The discussion, so far, has proceeded on the assumption that some such training programmes exist. And, indeed, the elements of such training programmes do exist in many African countries, but in general they can hardly be said to be systematically organized in order consciously to serve the needs of administrators in the business and industrial fields.

First, let us consider the basic training programme. Universities in several African countries provide courses in economics and commerce and, more recently, a few are beginning to introduce courses in business administration. The problem with these courses is not that they continue to bear the imprint of the colonial Powers (which is only to be expected), but that there is still a long way to go before the techniques acquired can be applied usefully to the local environment. For, at the level of basic training, the techniques of business administration and management (to the extent that they are taught at all) are likely to be useful in business, locally as in the metropolitan country. But, until local business and industry have developed sufficiently to become a well-established part of the local economy, the lack of a local background against which the principles and techniques could more easily come alive, even prior to the entry of prospective candidates into the administrative field, will continue to limit the success of the basic training courses.

Most of the courses of this type are at present very rudimentary, even as carbon copies of those abroad, and the need here would seem to be twofold: firstly, to extend their scope and, secondly, to develop interest and research into the organization and administration of local business, finance and industry in order to make these courses really come alive. The nature and content of such courses is fairly clear, but their relationship to the local economy has yet to be established; indeed, there is no effective substitute for this contextual relation, even by the device of study abroad in an environment that amply documents the content of the courses. For training abroad, both of the "pre-service" and of the "in-service" type, conveys maximum benefit only if the trainee already has a background in his home country against which to assimilate it.

It is in this connexion that local universities and other relevant training institutions for administrators in business and industry need the active assistance and encouragement of both government and private business institutions, so that they may obtain a knowledge of, and be able to research into the organization, administration, functioning and problems of such institutions. For it is only against such background knowledge and research results that the science and art of administration has developed in other countries. In this respect, the experience of other countries can be a guide to, but hardly an effective substitute for, experience of the administrator's environment. Otherwise, the sharing of the types of experience which regional and international training programmes aim to provide in the administrative field is bound to be limited and more likely to be negative rather than positive in content and contribution.

Specialized institutions concerned with the training of administrators are only now beginning to appear in some African countries, the most common being the institute of public administration or its equivalent. But these are mostly concerned with the training of administrators in government rather than in business and industry, the emphasis being mostly on public (that is, government) administration rather than on administration, including the administration of business and industrial enterprises. There is little doubt that collaboration between government and business could lead to the designing of the appropriate institutions and courses required for this purpose. It is not, however, the aim of this paper to tackle this aspect of the matter. What the courses should cover is fairly clear from the discussion in the earlier parts of this paper.

Nevertheless, some consideration may need to be given to the possibility of including provision for in-service training of administrators in the business and industrial field in the existing programmes of economic development and economic planning institutes. This proposal has special reference to the planning institutes established by the regional economic commissions of the United Nations. It should be possible to do this with the greatest economy because of the obvious connexion between the training of such administrators and economic development, which already is the main concern of such institutes. They are eminently suitable for organizing short courses of training at the regional level, of the types that have already been discussed. The problem of admitting candidates from the private sector could in this case be easily resolved by requiring only the sponsorship of the government of the member country concerned.

F. Role of documentation centres

Documentation centres in training institutions are necessarily a fundamental part of the training programmes at such institutions. They constitute the backbone of the teaching and research conducted by the staff. It follows, therefore, that training programmes designed for administrators in the business and industrial field should give special attention to the building up of an adequate supply of teaching and research material. This is normally an expensive proposition for any institution and therefore makes necessary the adoption of a system of exchange of documents between institutions operating in the same or similar fields of training, in order to keep costs down.

This system is of great benefit to the institutions that adopt it, but it tends to work to maximum advantage where there is also a clearing house for compiling, annotating and keeping all members of the exchange system informed of the latest developments and contributions in the field. In this connexion, the Industrial Development Centre of the United Nations can play a very important part as a clearing house for documentation centres, as well as a recipient member of the exchange system, especially if the proposal is adopted that the training programme of the planning institutes of the regional economic commissions should include the training of administrators in the business and industrial fields.

Such a clearing house can certainly become the quickest means of achieving a cross-fertilization of ideas among the institutes concerned and the enrichment of their training programmes. The Industrial Development Centre would compile bibliographies, case studies, etc., as part of its normal work, but there should not be too much difficulty in extending this role to serve the needs of economic planning as well.

The need for co-ordination would bring the Industrial Development Centre into close collaboration with existing centres for economic development, such as that of the Organization for Economic Co-operation and Development and universities in many parts of the world. At the present time, the African

Institute for Economic Development and Planning at Dakar uses the device of summer courses and seminars for university students and teachers in African universities and research institutions as a means of promoting close relations, discussions, interchange of ideas, and the dissemination of its teaching and research materials to such institutions. The proposal which has been made here in regard to the United Nations Industrial Development Centre, if adopted, would merely be a means of complementing and co-ordinating this kind of effort at the international level.

UNITED NATIONS TRAINING PROGRAMME IN INDUSTRIAL DEVELOPMENT AND PLANNING FOR AFRICAN GOVERNMENT OFFICIALS

by the United Nations Centre for Industrial Development

The United Nations training programme in industrial planning for African government officials was held in Cairo from 15 February to 11 May 1965. The programme was organized by the United Nations African Institute for Economic Development and Planning (IDEP) in Dakar, Senegal, in co-operation with the Economic Commission for Africa (ECA), situated in Addis Ababa, Ethiopia, and the Centre for Industrial Development at United Nations Headquarters in New York. The Government of the United Arab Republic, through the Institute of National Planning, Cairo, provided host facilities for the programme.

The programme was attended by eighteen participants, from fourteen African countries. The participants (see appendix A) were all nominees of their Governments and mid-career officials from ministries of planning or industry or other government organizations concerned with the formulation and implementation of industrialization programmes. All but two, who had been in government service for about a year after completion of their studies abroad, had been in government service for periods of from four to eighteen years. They varied in age from twenty-five to forty-four years; a large proportion were between twenty-nine and thirty-five.

The programme was financed by IDEP; and the United Nations Bureau of Technical Assistance Operations provided fellowships for thirteen participants. The programme was inaugurated on 15 February 1965, by Mr. Labib Shokeir, Minister of State for Planning of the Government of the United Arab Republic. The occasion was attended by Mr. Abdel-Rahman, Commissioner for Industrial Development, United Nations; Mr. Mogens Boserup, Director, African Institute for Economic Development and Planning; ambassadors from some of the African countries to the United Arab Republic and senior officials of the United Nations Secretariat as well as of the Government of the United Arab Republic.

Lecturers from fourteen countries took part in the course for periods of between three and thirty days. Specialists and experts from the United Arab

Republic lectured and held seminars on different aspects of industrial development. Specialized embassy personnel stationed in Cairo also lectured and offered the participants the benefit of their experience. Such specialized agencies of the United Nations as the International Bank for Reconstruction and Development, the International Labour Organisation, the Food and Agriculture Organization and UNESCO contributed substantially to the course.

A. Objectives of the training programmes

During the past two decades, most of the developing countries have embarked on economic development programmes to sustain increased rates of growth. In this task, government officials have been called upon to undertake complex and specialized tasks of planning for and implementing industrialization programmes. The Commissioner for Industrial Development referred to this problem in his statement at the time of the inauguration of the programme as follows:

> ...The role of the State is very important in the developing countries. It provides a horizon in terms of development goals and creates an atmosphere in which industries can be established and operated. The roles of government and of economic administrators, therefore, become more meaningful in aiding the process of industrial development. The economic administrators in the developing countries are already playing a vital role not only in initiating various industrial development projects, but also in influencing policies on foreign exchange, raw materials, licensing, etc...

In brief, government officials are required to act as "public sector entrepreneurs" in promoting and accelerating economic and industrial development programmes. This requires an awareness of the industrialization process as well as a knowledge of the inter-disciplinary techniques involved in the industrialization process. These techniques are so varied – ranging from economic planning to problems of engineering and technology – that they can only with difficulty be studied in combination, save on the job, through a series of assignments. This is of course a time-consuming process. A partial remedy lies in the *ad hoc* training of officials, aimed at supplementing their knowledge of industrialization processes and the various basic disciplines related thereto. This was the object of the Cairo programme.

The purpose of the programme, briefly, was to provide an economic background for technicians and a technical background for economists. It was not intended to be an academic programme in which a certain number of basic disciplines and techniques are taught. The programme was designed to give the trainees an idea of the process of industrial development from the planning to the implementation stages. Emphasis was placed on project-level planning, the study of technical and economic aspects of selected industries, policy measures to promote industrial development, and regional planning.

This paper attempts to evaluate the problems and experiences of this course for the benefit of similar courses organized elsewhere. Although training programmes have to be adapted to the particular situation and type of trainee, it is hoped that this experience will be valuable to those who conduct courses in industrial planning generally and in Africa in particular.

The Cairo programme might be considered in many ways as an experiment. In the first place, it was the first comprehensive and specialized training programme to be conducted in industrial development. Secondly, owing to the slender budget available, it had not been possible to interview or select participants; and since no specific specialization was required to qualify for the course, the backgrounds of the participants ranged from law to engineering. Thirdly, the course was bilingual and brought together individuals from both English- and French-speaking countries; and finally, the positions held by participants ranged from chiefs of planning units to managers of industrial establishments. Thus the Cairo programme covered a diversity of elements for which a central theme had to be evolved. This proved a challenging task, and it is believed that a common and acceptable programme was developed as the course got under way.

B. Review of action in connexion with the training programme

The general programme of the course was first discussed in May 1964 in Cairo, at the time of the meeting between the Executive Secretary of the Economic Commission for Africa (ECA), the Commissioner for Industrial Development and the Acting Director of the Institute of National Planning of the United Arab Republic. A brief outline of the course was developed at that time. It was left to the director of the course, who was appointed in December 1964, to fill in the details. His draft was further reviewed in Cairo in January 1965 by Mr. Boserup, Director of IDEP, Mr. Gouri, Director of the course, and Mr. Abu Ismail, Co-Director. The final outline appears in appendix B below.

Efforts were made to review this outline with the participants at the beginning of the programme with a view to ascertaining their interests. The discussions that followed indicated the degree of their interest in various areas and the level of instruction which would have to be followed during the course. Towards the middle of the course, the programme of work was reviewed. These discussions greatly helped the director to orient the course to suit the requirements of the participants. As a result, two subjects were added: regional development and foreign aid.

It was interesting to find that so much needed to be communicated and that the literature, although unsatisfactory in selected areas, was considerable. Further, the countries' experiences in industrial planning offered unique examples. In effect, twelve weeks may not have been sufficient to do full justice to such a course. On the other hand, this was the maximum period for officials to be away from their jobs.

The treatment of subjects and the time devoted to them, as the following table indicates, emphasized problems of implementing industrial development plans more than problems of formulation.

Table 1

ANALYSIS OF LECTURES GIVEN AT THE COURSE

	Title of course outline	*Lecturer*	*Number of lecture-seminar hours* [a]
1.	Survey of industrial growth in Africa	Mr. P.Bernard (France) Mr. Yusef Abu Ismail (United Arab Republic)	12
2.	Planning for economic and industrial development in Africa	Mr. P.Bernard (France) Mr. Ahmed Hosny (United Arab Republic) Mr. Kurt Sack (German Democratic Republic) Mr. H.Linsel (German Democratic Republic) Mr. Abdel Qayum (India) Mr. A.F.Ewing (United Nations Secretariat) Mr. N.Prasad (United Nations Secretariat) Mr. S.Okita (Japan) Mr. I.H.Abdel-Rahman (United Nations Secretariat) Mr. M.A.Azam (ILO) [b]	36
3.	Project level planning and implementation	Mr. B.Lehbert (IBRD) [c] Mr. L.Cresson (ILO) Mr. Moh. Sakr (United Arab Republic) Mr. J.Westoby (FAO) [d] Mr. P.Vakomies (FAO) Mr. Samir Taher (United Arab Republic) Mr. Ahmed Shaker (United Arab Republic) Mr. E.Kleinmann (France)	53

		Mr. G.S. Gouri (United Nations Secretariat) Mr. H.Sharaf (United Arab Republic)	
4.	Regional planning and industrial development	Mr. A.R.Abdel Meguid (United Arab Republic) Mr. P.Saraceno (Italy) Mr. V.A.Marsan (Italy)	22
5.	Instruments for promoting and guiding industrial development and inter-regional co-operation	Mr. K.G.V.Krishna (India) Mr. N.D.Ganjei (United Nations Secretariat) Mr. P.Saraceno (Italy) Mr. A.F.Ewing (United Nations Secretariat)	30
6.	Financing of industrial development	Mr. N.D.Ganjei (United Nations Secretariat) Mr. P.Saraceno (Italy)	14
7.	External aid to developing countries	Mr. W.J. van der Oord (United Nations Secretariat) Mr. K.Levick (United States of America) Mr. A.Biziaev (Union of Soviet Socialist Republics) Mr. L.W.Kangas (United States of America)	8
8.	Country papers by participants	Mr. H.Tantawi (United Arab Republic) Mr. A. El Kettani (Morocco) Mr. M.Yaiche (Tunisia) Mr. H.R.Monday (Gambia) Mr. Y.Guichard (Guinea) Mr. D.Dankaro (Nigeria) Mr. S.Kanda (Ghana) Mr. W.M.Philippos (Ethiopia)	17

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[a] The difference between lectures and seminars was one of time rather than method. In fact, the entire session was undertaken on a seminar basis. The lecture unit was one hour and fifteen minutes and the seminar unit was two hours and fifteen minutes. Guest lecturers generally delivered their lectures during the seminar period.

[b] International Labour Organisation.

[c] International Bank for Reconstruction and Development.

[d] United Nations Food and Agriculture Organization.

Considerable time was devoted to problems of translating macro-economic aggregates into meaningful projects and to problems relating to the establishment of industries. Some attention was given to policies and institutions necessary to promote industries in the African countries. Finally, efforts were made to review sources of external aid and in particular the mechanics of aid administration for giving and receiving aid.

No claims are made here that this is the most satisfactory approach to take for courses in industrial planning in the developing countries. But considering the level and interest of the participants and the facilities available in the United Arab Republic, this approach was generally considered by the participants themselves as worth while. Some of them even suggested that the course should be repeated.

The characteristic feature of the Cairo programme was the emphasis on plant visits. Various views were expressed at the beginning of the course as to when such visits should be made and how much time should be devoted to them. The question was whether plant visits should be deferred until project-level planning had been discussed or whether they should begin from the first week. It was decided to undertake a broad programme of visits from the start, and this proved to be a great advantage, since it gave the participants the proper perspective; it made them realize more clearly that the end product of their efforts was the factory itself. Secondly, being practitioners themselves, the participants began to ask questions about location, size, financing, and their place in the plan, etc., which made it possible to deal with these questions both from a practical point of view and in the over-all context of economic development. Thirdly, the discussions with plant managers focused the participants' attention on the technical and economic characteristics of specific industries, leading to an examination of the possibility of establishing similar techniques in their respective countries.

After some experiment, it was found that plant visits could best be undertaken in three stages. Before the visit to the plant, the manager would give a general review of the development of the particular industry in the United Arab Republic, to be followed by another brief talk in the plant itself on what the participants were going to see. Following the visit, there would be discussion in the classroom with officials of the industrial establishment concerned with production, finance and administration. It was not possible to follow this pattern in the case of all plants, but wherever it was followed, the visit yielded satisfactory results.

This point should be kept in mind in organizing future courses. In deciding on the location of the training programme, due attention should be given to the industrial base in that country and the willingness of the industrial establishments to spare time for the programme. In this connexion, it should be recorded here that the industrial establishments in the United Arab Republic provided full support for the programme. It was always fascinating to see the industries in action; the visits produced an awareness both of opportunities and of problems. There is no substitute for this kind of experience and it should form an integral part of any industrial development course.

Another feature of the course was attendance at and participation in the international meeting on the pulp and paper industry held in Cairo in March 1965. This meeting was organized by FAO and ECA, and was attended by technicians and managers of the paper industry from various parts of the world. The participants attended the relevant meetings and the experts attending the meeting gave special lectures to the participants of the course. This was followed by an interesting discussion on the problems of establishing pulp and paper industries in Africa, their size and location, inter-regional co-operation, etc. Detailed studies were also made of iron and steel, cement and tire-making industries.

Lastly, several participants presented papers to the group. These helped the group to appreciate the special problems facing the African countries, and the discussions reflected, in effect, a summary of the course as it affected the problems of those countries.

While efforts were made to communicate information through various means to the participants, this took much time, and very little time was left for additional reading.

Table 2

ANALYSIS OF TIME SPENT ON DIFFERENT ACTIVITIES

		No. of hours
1.	Lectures and seminars	192[a]
2.	Plant visits (actual time spent)	66[b]
3.	Attendance at international meetings	11
4.	Review of outline, progress of course and administrative matters	10
	Total:	279

[a] Including discussions on plant visits.
[b] Not including travel time, some of the plants being located outside Cairo.

Whenever the participants were not visiting plants or attending classes, they were visiting historical sites. While this was interesting and beneficial, the pace of the work could be felt towards the end of the course. Perhaps some mid-term break and a proper spacing of holidays might be considered useful.

C. Lecturers

One of the main features of the course was the participation in it of eminent and experienced persons from all over the world, who brought to it a variety of experiences. Some headed the planning agencies of their countries, some were managers of industrial establishments, both large and small, foreign aid administrators and senior United Nations Secretariat officials. Most of the lecturers were practitioners themselves and contributed substantially to the process of the industrial development in their countries. A list of lecturers is given in appendix C.

Table 3

CLASSIFICATION OF LECTURES

	Item of the outline	*Regular lecturers*	*Guest lecturers* [a]
1.	Survey of industrial growth in Africa..........	2	-
2.	Planning for economic and industrial development in Africa...........................	2	8
3.	Project-level planning and implementation..................................	3	7
4.	Regional planning	2	1
5.	Policy for the promotion of industrial development.........................	2	2
6.	Financing of industrial development..........	2	-
7.	External aid...	-	4

[a] Guest lecturers delivered three lectures, on the average, to the course.

As the above table indicates, each item of the outline was covered by two regular lecturers who stayed in Cairo for from two to four weeks. Most of the guest lecturers dealt with problems of planning and project-level planning, which are highly topical subjects of interest.

It is interesting to note that the number of lecturers was large in relation to the total number of participants. This is inevitable in a course of industrial planning and development. First, the range of subjects is wide and involves substantial specialization. No single individual would be able to cover all subjects; each subject relates to a specialized field and needs to be treated in all its theoretical and practical aspects. It was found, moreover, that two lecturers could divide the daily workload comfortably. And finally, the general idea of the training programme was to gather a variety of experiences and men of proved merit so as to enlarge the contacts of the participants with the rest of the world. But this approach presented its own problems, the main one being that, for some lecturers, Cairo was the closest they came to Africa. The lecturers were fully aware of this fact and therefore encouraged the participants to state their views during the discussion periods. This was not the same, however, as discussing specific African problems with African participants. Fortunately, the course had the benefit of the services of a professor of economics at University College, Nairobi, of ECA officials and of some lecturers who had spent considerable time in Africa. The value of a course, whether it is held in Africa or other continents, can be considerably increased if there is a balance between local lecturers, to discuss local and regional problems, and lecturers from industrialized countries.

D. Languages

The characteristic feature of all meetings and training programmes in Africa is the use of two languages, English and French. The Cairo course, which was conducted in those two languages, required elaborate simultaneous interpretation and translation facilities. Such services are generally expensive and also scarce, and their benefits accrue only when the size of the operation is large. For the Cairo course, which was modest in terms of number of participants, yet of long duration, the overheads proved high. Fortunately, the UNESCO office in Cairo and the offices of the Arab League loaned some of their equipment, and it was possible to hire local simultaneous interpreters and translators, who served the course very efficiently.

The important consideration in arranging similar courses elsewhere in Africa is to ascertain whether appropriate interpretation and translation services are available. The location of the 1965 course in Cairo was advantageous from the point of view of costs. These services were available in Cairo at about one-third of the cost entailed, had they had to be imported from abroad.

E. Documentation

The documentation distributed to the participants was considerable. While useful from the point of view of the course, it presented some transportation problems for the participants. The budget of future programmes should allow for the shipping of documentation first to the place of the training programme and then to the countries of participants. It is interesting to note here that the Economic Development Institute provided each participant with a small library which, if acquired on the market, would cost $US 2,000.

The documentation distributed during the programme consisted of basic documents, background documents and summaries of lectures delivered at the course. The basic document, as understood here, consisted of selected articles or a book presenting the problem under discussion in simple terms and also reviewing all up-to-date literature. The background documents were generally reproduced at the Institute of National Planning; they consisted of selected articles from a number of journals and books. Documentation to be used at similar courses in the future should be carefully prepared and reviewed in advance, to ensure that adequate supplies are available when the course begins.

There was great variation in the notes on the lectures delivered at the course, from short-hand notes to elaborate essays. The lack of uniformity in this respect was mainly due to the fact that preparations for the course were not made early enough and that some lecturers were pressed into service at short notice. Such arrangements should be more carefully planned in the future. Some lecturers, however, felt that to supply the participants with notes well in advance would limit their interest in the lectures themselves. Notes should preferably follow the lecture, primarily to provide references and as a reminder of the points made by the lecturer.

F. Some general considerations

The office of the director of the programme, consisting of two secretaries only, was found to be too small to handle the organization and conduct a three-months' course. It had to sustain both the substantive and the administrative sides of the course, co-ordinating activities from arrivals of lecturers to supplies of documentation to participants. The work was facilitated, however, by the whole-hearted co-operation of the staff of the National Planning Institute and the staff of the UNTAB (United Nations Technical Assistance Board) resident representative's office, who spared no efforts to assist the director in every way.

Future courses may not be able to count on similar facilities. In order to assist the director and free him from all his administrative charges, consideration should be given to the appointment of a deputy-director and, possibly, an administrative assistant in the director's office.

To be effective and useful, training programmes should not be one-time affairs. They have to be nursed, fed and multiplied if their benefits are to spread. The peculiar features of these programmes are that they are both capital-intensive and labour-intensive. On the other hand, it is difficult to measure their output and they thus evade any quantitative assessment. But such assessment may not be necessary at all if a need for such training programmes can be established. In the African context, the need not only exists but it is paramount. The African continent has many young countries whose governments are making vigorous efforts to build an industrial base. In this task, training programmes of this type, which put a premium on practice rather than precept, have a definite place. Consideration should be given to organizing training programmes in industrial development, provided the resources permit, in each region of Africa, rather than one in a given year or every few years.

APPENDIX A

List of participants attending the course

Country [a]	*Name and title*	*Address*
Dahomey	Ferdinand Megnigbete Chargé d'études à la Direction des Etudes et du Plan	Ministère des Finances, des Affaires Economiques et du Plan Direction des Etudes et du Plan Porto-Novo Dahomey
Ethiopia	Wolde-Mariam Philippos Counterpart to Bilateral Industrial Planning Expert Office of the Planning Board	Office of Planning Board P.O.Box 1037 Addis Ababa Ethiopia
Gambia	Horace R.Monday Deputy Financial Section Secretary Ministry of Finance	Ministry of Finance Bathurst Gambia
Ghana	Samuel Ph.K.Kanda Assistant Projects Officer Ministry of Industries	Ministry of Industries P.O.Box No. M.39 Accra Ghana
Guinea	Yves L.R.Guichard Economist, Junior Officer Ministère du Développement économique	Ministère du Développement économique Conakry Guinea
Guinea	Ismael Ghussein [b] Commercial attaché Guinean Embassy	Guinean Embassy 46 Mohamed Mazhar Street Zamelek, Cairo United Arab Republic
Liberia	John E.Scott Senior officer, Division of African Domestic Trade Department of Commerce and Industry	Department of Commerce and Industry Division of African Domestic Trade, Monrovia Liberia
Libya	Aly Taghough Head, Industrial Planning Section Ministry of Planning and Development	Economic and Social Affairs Division, Ministry of Planning and Development P.O.Box 600, Tripoli Libya
Morocco	Abdallah El Kettani Chef de Bureau, Service du Crédit, Sous-Secrétariat d'Etat aux Finances	Sous-Secrétariat d'Etat aux Finances Service du Crédit Rabat Morocco

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[a] In alphabetical order.

[b] Attended the course by special arrangement.

Country	*Name and title*	*Address*
Niger	Souleymane Danladi Chef, Bureau du Commerce extérieur, Ministère des Finances et des Affaires économiques	Bureau du Commerce extérieur Ministère des Finances et des Affaires économiques Niamey Niger
Nigeria	David Dankaro Senior Assistant Secretary Ministry of Commerce and Industry	Federal Ministry of Industry Lagos Nigeria
Tanzania	Isiah S.A.Mwaipaja Assistant Manager Mwananchi Ocean Products Ltd.	Mwananchi Ocean Products Ltd. P.O.Box 2775 Dar es Salaam Tanzania
Tunisia	Mohamed Yaiche Ingénieur de Travaux statistiques et des Etudes économiques Service des Statistiques	Secrétariat d'Etat au Plan et à l'Economie Nationale Service des Statistiques P.O.Box 65 Tunis Tunisia
United Arab Republic	Hussein Abdel Hamid Hussein Chief Engineer, Erection Dept. Egyptian Iron and Steel Co.	Egyptian Iron and Steel Co. P.O.Box Helwan Cairo United Arab Republic
United Arab Republic	Ahmed Ezzat Abdel Gayed Projects Sub-Manager Misrayon Co.	Misrayon Co. Kafr el Dawar United Arab Republic
United Arab Republic	Mustapha Kamal Abdel Samad Deputy-Director of Planning Dept., Egyptian General Organization for Technical Industries	Egyptian General Organization for Technical Industries 28 Talaat Harb Street Cairo United Arab Republic
United Arab Republic	Hosny Tantawi Manager of Food Industries Dept.	General Organization for Industrialization 6 Khalil Agha Street Garden City, Cairo United Arab Republic
Zambia	Nedson B.Nyoni Executive Officer Ministry of Commerce and Industry	Ministry of Commerce and Industry P.O.Box 1968 Lusaka Zambia

APPENDIX B

Outline of the course on industrial planning

15 February — 11 May 1965

1. Survey of industrial growth in Africa

A general survey of industrial development in Africa.
Patterns of industrial development.
Structure of industry, size and types of industries.

Suggested documents

United Nations	*World Economic Survey* (*Industrial Development, part I*) 1961
ECA (Economic Commission for Africa)	*Growth of Industry in Africa*, 1962
ECA	*Report of the ECA Industrial Co-ordination Missions*
United Nations	*Process and Problems of Industrialization in the Under-developed Countries*, 1956
United Nations	*Patterns of Industrial Growth* (*Statistical data*) 1938-1961
Ministry of Co-operation, France	*Studies in planning in the French-speaking countries in Africa*

2. Planning for economic and industrial development in Africa

Resource endowment; infrastructure development; size of markets; level of skills; institutional framework; savings and investment; industrial development and economic growth.

Planning to overcome economic backwardness; rationale and objectives of planning; formulation of plants; relation of industrial sectoral plan to national plans; formulation of targets; import substitution; export potential; public sector and private sector allocation of industry projects; regional development and location of industries.

Suggested documents

ECA	*Perspectives for Industrialization in Africa*
Bryce M.	*Industrial Development*
Tinbergen J.	*Design for Development*
Lokanathan A.S.	*Elements of a Programme for Industrial Development* OECD, Paris, 1962
ECAFE	*Economic Survey of Asia and the Far East, 1961* (United Nations publication, Sales No.: 62.II.F.1)
OECD	*Training Programme in Economic Development*, Paris, 1961

OECD	*Methods of Industrial Development*, Paris,1960
Bryce M.	*Industrial Development*, New York, 1960
United Nations	*Planning for Economic Development: Report of the Secretary-General transmitting the study of a Group of Experts* (United Nations publication, Sales No.: 64.II.B.3)
United Nations	*Report of the United Nations Seminar on Industrial Programming* (São Paulo, March 1963) (United Nations publication, Sales No.: 64.II.B.8)
ECAFE	*Programming Techniques for Economic Development*, 1960
ECAFE	*Problems of Long-Term Economic Projections*, 1963
ECAFE	*Formulating Industrial Development Programmes*, 1961

3. *Project-level planning*

(*a*) Formulation and appraisal of industrial projects:

Sequence of project development;

Technical and economic elements of the project;

Preparation of the project:

Technical feasibility investigations;
Market studies;
Physical resource flow plan;
Financial flows;

Project costs, investment and rates of return, commercial considerations:

Over-all plan considerations;
Phasing of the project, preparation of designs, bids, controls, etc.

(*b*) Institutional framework and problems of project implementation:

Common problems of implementation and management in newly developing countries;

Organizational arrangements for implementation of projects in the public sector, control of ministries, autonomous organizations, licensing procedures for procuring raw materials and equipment;

Techniques for better implementation: budgeting, cost controls, measurement of goals and achievements in common units, scheduling network analysis;

Progress reporting combined with corrective action;

Approaches to better implementation: plant utilization, inventories, productivity of men and machines, incentive environment, government action.

Suggested documents

Economic Commission for Latin America (ECLA)	*Manual on Economic Development Projects*, New York, 1958
Bryce M.	*Industrial Development* (*part 2*), New York, 1960

United Nations	Project evaluation papers submitted to the São Paulo symposium
Weaver, Bauman and Henigan	*Cost and Profitability Estimations, Chemical Engineers Handbook*, New York, 1961
United Nations	*Training for Industrialization* (E/3901)

4. Financing of industrial development

Public and direct financing. Direct financing of industrial enterprises in the public sector; need for financial autonomy of public enterprises; price policies of public enterprises as a factor in financing.

Mixed enterprises: rationale of mixed enterprises, financial structure and management.

Private enterprises: methods of financing; external and internal financing; "self-financing" as an important source of private investment in industry; government policies as regards rates of profit in private enterprises; differential taxation of distributed and non-distributed profits as an incentive to self-financing.

Joint ventures with foreign capital as a source of financing: economic and political aspects of joint ventures; question of an investment climate and formulation of an international investment code.

Equipment credits as a source of financing: conditions of supply of such credits by capital-exporting countries; national insurance schemes of equipment credits as part of export promotion measures by supplying countries; international re-insurance of such credits as a means of promotion of industrialization of developing countries.

Suggested documents

United Nations	*The Capital Development Needs of the Less-Developed Countries*, Sales No.: 62.11.D.3
United Nations	*The Promotion of the International Flow of Private Capital*, E/3905
United Nations	*Financing of Industrial Development Progress Report and Proposals for Programme of Work*, E/C.5/32
United Nations	ibid., *Review of Activities*; E/C.5/58
United Nations	ibid., *The Provision of Credits for the Financing of Imports of Machinery and Equipment into Developing Countries*, E/C.5/26
United Nations	*Export Credits for the Financing of Capital Goods Requirements of Developing Countries*, E/C.5/64
United Nations	*Working Capital Requirements of Industrial Enterprises*, E/C.5/57

5. Instruments for promoting and guiding industrial development and inter-regional co-operation

Fiscal concessions;
Trade policies and incentives;

Government control and assistance licensing, raw material allocation, transport, etc.;
Exchange rates;
Work of ECA missions in East, West, Central and North Africa.

Suggested documents

United Nations	*Planning for Economic Development*
ECAFE	*Implementation of Plans* (1955, Seminar paper)
United Nations	Selected papers of the United Nations Trade and Development Conference, Geneva, 1964
ECA	Reports of the Industrial Co-ordination Missions
ECLA	*Possibilities of Integrated Industrial Development in Central America*

6. *Regional planning and industrial development*

Role of regional planning;
Criteria of allocating industries;
Planning for industry complexes;
Experience of Aswan and Southern Italy.

Suggested documents

OECD	*Regional Planning*, Paris, 1962
SVIMEZ (Association for the Industrial Development of Southern Italy)	Legislation for the Development of Southern Italy
United Arab Republic	Conference papers on Aswan Regional Planning

7. *Role of external aid*

Capital needs;
Source of aid;
Administrative aspects of giving and receiving aid.

Suggested documents

Special Fund	*Formulating Requests for the Special Fund*
IBRD	*Assistance to Industry*
United Nations	*International Flow of Long-Term Capital and Official Donations, 1960-1962* (United Nations Publication, Sales No.: 65.II.D.1)
United Nations	*The Expanded Programme of Technical Assistance for Economic Development of Under-developed Countries: an explanatory booklet*, 1961

APPENDIX C

List of lecturers

Name	*Title*	*Address*
Mr. I.H.Abdel-Rahman	Commissioner for Industrial Development United Nations Headquarters	United Nations Headquarters (Economic and Social Affairs Department) Centre for Industrial Development Room No. 2920-A New York
Mr. A.R.Abdel Méguid	Director Regional Planning Project Aswan Organization	Aswan Governorate Aswan, United Arab Republic
Mr. A.Abu Ismail	Professor of Economics Cairo University	Cairo University Cairo, United Arab Republic
Mr. A.A.Azam	Expert in handicrafts and rural industries, Arab States Fundamental Education Centre (ASFEC)	Sirs El Layyen Menoufieh, United Arab Republic
Mr. P.Bernard	Commissariat du Plan d'Equipement et de la Productivité	233 Boulevard Saint Germain Paris 7e, France
Mr. A.Biziaev	Counsellor for Economic Affairs of the USSR Embassy	USSR Embassy 19 Sh. El-Mahad El Swissri Zamalek, Cairo United Arab Republic
Mr. L.Cresson	Project Manager Institute of Small Industries	8 Sh. Ahmed Amin Dokki, Cairo United Arab Republic
Mr. A.F.Ewing	Special Adviser to the Executive Secretary, Economic Commission for Africa	P.O.Box 3001 Addis Ababa Ethiopia
Mr. N.D.Ganjei	Chief Financial Policy and Institutions Section, United Nations Headquarters	United Nations Headquarters, Economic and Social Affairs Department Room No. 2325-I New York
Mr. G.S.Gouri	Chief Management and Training Section, United Nations Headquarters	United Nations Headquarters, Centre for Industrial Development Room No. 3209, New York
Mr. Saleh Hamed	Director, Operational Research Centre (Institute of National Planning)	32 Sh. Shagaret El Dor Zamalek, Cairo United Arab Republic

Name	*Title*	*Address*
Mr. Ahmed Hosny	Senior expert, Institute of National Planning	3 Sh. Moh. Mazhar Zamalek, Cairo United Arab Republic
Mr. L.N.Kangas	Assistant to the Representative Ford Foundation	Rue de l'Amérique Latine Garden City, Cairo United Arab Republic
Mr. E.Kleinmann	Société d'Etudes pour le Développement économique et social	67, rue de Lille Paris 7e France
Mr. K.G.Krishna	Professor of Economics University College	University College P.O.Box 30197, Nairobi, Kenya
Mr. B.Lehbert	Project officer Industrial Division, IBRD	IBRD, 1818 H Street N.W. Washington, D.C. United States of America
Mr. K.Levick	Industry officer Agency for International Development, United States Aid Mission to the United Arab Republic	American Embassy 5 rue de l'Amérique Latine Garden City, Cairo United Arab Republic
Mr. H.Linsel	Expert, Berlin School of Economics, Democratic Republic of Germany	Institute of National Planning 3 Sh. Moh. Mazhar Zamalek, Cairo United Arab Republic
Mr. V.Marsan	Co-Director, Instituto per la Ricostruzione Industriale	Via V. Veneto, 89 Rome Italy
Mr. B.Nomvete	Chief Industry Division Economic Commission for Africa	ECA, P.O.Box 3001 Addis Ababa Ethiopia
Mr. S.Okita	Executive Director Japanese Economic Research Centre	Nikkei Building No. 5 1-Chome, Otemachii Chiyado-Ku, Tokyo Japan
Mr. P.S.N.Prasad	Director Asian Institute for Economic Development and Planning	Snam Mah. Road Bangkok Thailand
Mr. Abdul Qayum	Expert Institute of National Planning	3 Sh. Moh. Mazhar Zamalek, Cairo United Arab Republic
Mr. K.Sack	Expert Berlin School of Economics, Democratic Republic of Germany	Institute of National Planning 3 Sh. Moh. Mazhar Zamalek, Cairo United Arab Republic

Name	*Title*	*Address*
Mr. P.Saraceno	Vice-President Instituto per la Ricostruzione Industriale	Via V. Veneto, 89 Rome Italy
Mr. M.Shaker	Chairman Board of Directors Abu Zaabal Steel Co.	Abu Zaabal Steel Co. Abu Zaabal United Arab Republic
Mr. A.Shaker	Plant Manager Turah Cement Factory	Turah Cement Factory Turah, Cairo United Arab Republic
Mr. H.Sharaf	Professor Faculty of Commerce Cairo University	Cairo University Cairo United Arab Republic
Mr. S.Taher	Works Manager Iron and Steel Industry	Iron and Steel Industry Helwan, Cairo United Arab Republic
Mr. P.Vakomies	Chief Forest Industries and Utilization Branch FAO	FAO Via delle Terme di Caracalla Rome Italy
Mr. W.J. van der Oord	Resident Representative of UNTAB	UNTAB 29 Sh. Willcocks Zamalek, Cairo United Arab Republic
Mr. J.Westoby	Deputy Director Forestry and Forest Products Division FAO	FAO Via delle Terme di Caracalla Rome Italy

APPENDIX D

Selected list of publications and documents

I. Publications and documents distributed to the participants

(a) *Survey of industrial growth in Africa*

Economic Survey of Africa since 1950, United Nations, New York, 1959
Industrial Growth in Africa, United Nations, New York, 1963
African Timber Trends and Prospects, ECA Doc. E/CN.14/318
Development of the Iron and Steel Industry in Africa, ECA Doc. E/CN.14/INR/27
Basic Chemicals and Fertilizers, ECA Doc. E/CN.14/INR/73
Textiles in West Africa, ECA Doc. E/CN.14/INR/73
Cement Industry in West Africa, ECA Doc. E/CN.14/INR/75
Development of Food Industries in West Africa, ECA Doc. E/CN.14/INR/76
Soil Fertility and Fertilizers in West Africa, ECA Doc. E/CN.14/INR/70
Building Materials Industry in Africa, ECA Doc. HOU/WP/4 and Add. 1

(b) *Planning for economic and industrial development in Africa*

World Economic Survey 1963, Part I, United Nations, New York, 1964
World Economic Survey 1963, Part II, United Nations, New York, 1964
World Economic Survey 1961, United Nations, New York, 1962
Economic Survey of Asia and the Far East 1961, ECAFE, Bangkok, 1962
Planning for Economic Development, United Nations, New York, 1963
Programming Techniques for Economic Development, ECAFE, Bangkok, 1960
Formulating Industrial Development Programmes, ECAFE, Bangkok, 1961
Problems of Long-Term Economic Projections, ECAFE, New York, 1963
Report of the São Paulo Seminar on Industrial Programming, United Nations, New York, 1964
Impact of Planning on Economic Growth in Japan, Japan Economic Research Centre, 1965
Problems and Prospects of Italian Economic Development, Ministry of the Budget, Rome, 1963
Prospectives for Industrialization in Africa, A.F.Ewing and S.J.Patel

(c) *Project-level planning and problems of project implementation*

Industrial Development, Murray D. Bryce, McGraw-Hill, 1960
Feasibility Studies, Economic and Technical Soundness Analysis, Capitol Projects, Department of State, Agency for International Development, Washington, 1963
Benefit-Cost Evaluations as Applied to AID Financed Water or Related Land Projects, Department of State, Agency for International Development, Washington, 1963
Proceedings of the Conference on Pulp and Paper in Africa and the Middle East, ECA, Cairo, March 1965
Industrial Standardization in Developing Countries, United Nations, New York, 1964
Establishment of Industrial Estates in Under-Developed Countries, United Nations, New York, 1961
Training of National Technical Personnel for Accelerated Industrialization of Developing Countries, E/3901 and Addenda 1 and 2
Statement by Executive Secretary on Training and Economic Development, ECA, Nairobi, February 1965

(d) *Financing of industrial development*

The Capital Development Needs of the Less-Developed Countries, United Nations, New York, 1962

Financing Economic Development, United Nations, E/3905 and Add.1
Activities of the Centre for Industrial Development, United Nations, E/C.5/64

(e) *Instruments for promoting and guiding industrial development and inter-regional co-operation*

Possibilities of Integrated Industrial Development in Central America, United Nations, New York, 1964
ECA Report of the West African Industrial Co-ordination Mission, E/CN.14/246
ECA Report of the Industrial Co-ordination Mission to East and Central Africa, E/CN.14/247
ECA Report of the Industrial Co-ordination Mission to Algeria, Libya, Morocco and Tunisia, E/CN.14/248
ECA Statement by the Executive Secretary on Economic Co-ordination, E/CN.14/273
ECA Report of the Conference on Industrial Co-ordination in West Africa, E/CN.14/324

(f) *Regional planning and industrial development*

Elements of Regional Planning, A.R. Abdel Meguid
Aswan — A Multi-Dimensional Approach to Regional Development
Regional Planning of Aswan — Organizational Structure
Regional Planning of Aswan — Technical Data on the High Dam
Aswan Regional Development — An Integrated Programme and Priorities

(g) *External aid*

Report on Technical Co-operation, ECA, E/CN.14/318
Aid to Business (Overseas Investment), Department of State, Agency for International Development, Washington, 1964
United Nations Special Fund, Project Guideline, No.1, SF/PGL/1
Ford Foundation Programme in the United Arab Republic, Ford Foundation, New York
US Economic Assistance to United Arab Republic, US AID Mission, Cairo
Japan and the Developing Nations, Foreign Affairs Association of Japan, 1965

(h) *Documents published by the Institute of National Planning, Cairo*

Memo.No.386: Growth pattern of the manufacturing sector in Egypt (1950-1970), by F.R.Fahmy
Memo.No.452: The development of the United Arab Republic's foreign exchange policy, by I.H.El-Issawy
Memo.No.454: The place of agriculture in economic development, by R.N.Poduval
Memo.No.477: Accounting for use of resources and funds, by K.Bahr
Memo.No.479: Economic development of Burundi, by K.A.Blakey
Memo.No.480: General considerations on educational planning, by A.Zaky
Memo.No.481: Needs and problems of education in Africa, by M.Dartigue
Memo.No.494: Role of semi-State enterprises in the national economy, by H.Linsel and K.Sack
Memo.No.505: The system of planning in a socialist economy, by Z.Federowicz
Memo.No.517: Some remarks on the problem of pricing in the socialist economy, by Z.Federowicz
Memo.No.521: Organization of the monetary turnover and settlements in the socialist economy, by Z.Federowicz
Memo.No.525: Some notes on the nationalized industries of the United Arab Republic and their pricing policies, by E.E.Watkin
Memo.No.527: Cost plus and full cost pricing techniques in a public enterprise, by E.E.Watkin
Memo.No.530: An introduction to the problems of decision-making in enterprises, by E.E.Watkin
Memo.No.548: Planning of industrial development in the United Arab Republic, by F.R.Fahmy

II. Background papers

1. The process of economic planning, by M.F. Millikan.
2. Questionnaire on industrial planning and development (prepared by the United Nations Secretariat).
3. The Centre for Industrial Studies.
4. A self-test in project preparation.
5. 14 various tables.
6. Questionnaire for industrial projects, IBRD.
7. Financial evaluation of capital projects.
8. Elements of financial analysis.
9. How to read a financial report.
10. Study of the market.
11. How to evaluate new capital investments, by J.G. McLean.
12. Industrial complexes: definition, classification and justification.
13. Kenya development plan for the period 1 July 1964 to 30 June 1970.
14. Pre-investment data for food processing industry, by N.H. Ishler.
15. The East-African common services organization.
16. Pre-investment data on the aluminium industry.
17. The Inter-American Development Bank and industrial development in Latin America.
18. Location factors for the chemical industries in developing countries, by L.H. Nordenson.
19. Studies in economics of industry.
20. The ABC's of the critical path method, by F.K. Levy, G.L. Thompson and J.D. Wiest.
21. Interpretation of PERT.
22. Project scheduling and control.

APPENDIX E

List of industrial establishments visited by the participants

Plant or factory	*Location*
Eastern Tobacco Company	Gizeh (Cairo)
Stella Beer Factory	Gizeh (Cairo)
"Kaha" Factory (preserves)	Medinet el Tahrir
Torah Factories of Portland Cement	Torah
"Beida" Dyers Company (textiles)	Kafr el Dawar
Transport and Engineering Company, "Nisr" Tyre Factory	Alexandria
National Paper Factory	Alexandria
"Edfina" Canning Factory	Alexandria
Egyptian Copper Works	Alexandria
"Misr" Company for Spinning and Weaving	Mehalla el Kobra
The Iron and Steel Company	Helwan (Cairo)
High Dam Complex	Aswan
"KIMA" Fertilizers Company	Aswan
Aswan Dam and Electric Power Station	Aswan
Suez Petroleum Refinery Company	Suez
El Nasr Factory for Fertilizers	Suez
"Timsah" Company (ship building)	Ismailia
Canaltex Company (flooring and insulating material manufacturing)	Ismailia

THE EXPERIENCE OF SVIMEZ (ASSOCIATION FOR THE INDUSTRIAL DEVELOPMENT OF SOUTHERN ITALY) IN THE TRAINING OF INDUSTRIAL ECONOMIC ADMINISTRATORS

by Pasquale Saraceno *

SVIMEZ was formed on 2 December 1946. Its objectives are laid down in article 2 of its statute, as follows:

> The association is concerned with promoting, in the spirit of an effective national solidarity and with a unitary approach, detailed studies on the economic conditions in southern Italy, with a view to proposing specific programmes of action and projects intended to create and develop in the southern regions and in the major islands the industrial activities which best meet the ascertained requirements....

SVIMEZ is a private, non-profit association. It obtains its funds from annual payments made by some ninety industrial and service enterprises, banks and public and private institutions. Since 1958, SVIMEZ has received contributions from the Italian State.

SVIMEZ began operations in the period following the Second World War. This is reflected in the direction of its work. After a passage of over twenty years, the problem of southern Italy once again came into prominence. But whereas in the past that problem had attracted the attention of individual experts and in some cases had become the object of government intervention, it had been treated in terms of special provisions for particularly favoured zones and regions. Now, for the first time, it was studied as a part of the economic growth of the country as a whole.

In this context, two things were required for a correct formulation of development policy: first, to widen and deepen knowledge of the real problems of southern Italy; secondly, to integrate the results of international economic thinking with reference to the development of backward countries. SVIMEZ has helped to meet these two requirements by its research and documentation.

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* Vice-President, Associazione per lo Sviluppo dell'Industria nel Mezzogiorno.

From the beginning, SVIMEZ has carried out research in five different fields: economic policy, industrial economy, agrarian economy, jurisprudence and statistical analysis. The results of this research have provided the basis and motivation for the principal choices and decisions made in economic policy in Italy during the past twenty years. Brief mention should be made of the participation of SVIMEZ in the preparatory studies leading to the establishment of the Cassa per il Mezzogiorno; of its positive contribution to the elaboration of the development scheme for employment and income in Italy for the ten years 1955-1964 (Vanoni scheme); of its examination of problems connected with the location of industries, with particular reference to the industrial development zones; of the important co-operation furnished in more recent years to the National Commission for Economic Planning.

The urgency of the need to launch an economic policy directed towards overcoming regional inequalities made it particularly important for Italy, which was emerging from twenty years of cultural isolation, to acquaint itself with the more significant contribution which world economic thinking had made to the study of the problems of development. To this end, SVIMEZ has for more than ten years published a monthly paper on the problems of developing countries. The most relevant essays and articles from international publications on this subject are thus made available in Italian. It should be added that this material, which is of a specialized nature, is to be found only in publications with a limited circulation which SVIMEZ, because of its activity, receives regularly.

A. The Centre for Economic Development Studies

In the nineteen-fifties, various measures were taken to remedy regional inequalities in Italy. The results have been progressively taking shape. A correct evaluation of these results is particularly important both for a continuation of the development policy of our country and for the utilization of the experience gained in other economic, social and political contexts, such as those of the developing countries. It was felt that the experience of SVIMEZ, both in regard to policy for southern Italy and in regard to theoretical studies, might form an interesting basis for the training of those intending to examine the problem of development on a theoretical and a practical level. It was therefore decided to establish a Centre for Economic Development Studies. This was started in 1958 and has received support from the Ford Foundation and the Italian Government, as well as from SVIMEZ. The Centre's activity follows two main and closely allied lines, namely, research and training.

Various research studies on development problems have been completed. The most important of these have been published in a collection by SVIMEZ. Among them we may cite the following: "Private initiative and public action in economic development planning" by P.Saraceno, "The multiplying effects of the investments of the Cassa per il Mezzogiorno" by F.Pilleton, "Structural aspects of Italian industries" by L.Bruni, "The demographic dynamic of Italian regions – forecasts up to 1981" by Livi Baeci, and "Productivity and prices in the development process – Italy's experience between 1950 to 1957" by C.Segré.

Training is along two lines: training and specialization courses for Italians in particular and individual or collective assistance for investigators and experts from developing countries. Eight courses have been held so far; these were attended by 272 students, of whom twenty-six were foreigners. SVIMEZ provides scholarships for most of those who attend the courses, which are free. It should be emphasized that the majority of the Italian students come from various regions of the south. It is also interesting – as proof that this initiative meets the real needs discovered in the major centres of decision on development policies – that the Cassa per il Mezzogiorno and the Institute for Assistance in the Development of Southern Italy (IASM) have decided to increase their study scholarships. At the end of each course, in order to effect the necessary integration of theoretical teaching, the students make a study trip, visiting some particularly interesting centres with the object of evaluating what has been done in various sectors.

In the first phase (1958-1963), the trend and content of the courses were conditioned by the need to acquire knowledge of the mechanism of the development of the Italian economy, with particular emphasis upon the question of regional inequalities and the evaluation of the aid given and of the institutional provisions made to overcome these inequalities.

As shown in more detail in appendix A, the course was divided into three parts. The first group of lectures concerned the theory of economic development and aimed at providing the basic knowledge considered indispensable for a thorough examination of the other subjects in the course and, more generally, for a good understanding of the mechanisms and strategies of economic development. The second group concerned problems of development policy, taking account of the important experience gained in many countries in this field. Finally, the third group attacked Italy's economic development problems. During the course, students were assigned brief research projects on subjects of particular interest within the framework of those contained in the programme of lectures.

From 1964, however, some important innovations were introduced in the programme. For the level of development reached in southern Italy after fifteen years of policy directed towards the south had made it more urgent than ever to provide supervisory personnel capable of efficiently implementing the measures already initiated rather than of creating new ones. Moreover, there also now exist a number of postgraduate training schemes in Italy, dealing with theoretical problems of development. In regard to these, it can truly be said that the SVIMEZ programme has been an example and an invitation to follow suit. In this second phase, therefore, SVIMEZ has conducted courses bearing more directly on problems of single industrial, agricultural, commercial and financial production units (see appendix B).

The special feature of the new courses, apart from the fact that new subjects of instruction are introduced (problems of labour, management, organization, planning and financing, and the market for single production units) is the participation of managers from institutions and public and private enterprises, as well as of university professors.

Naturally, in addition to instruction regarding units of production, a certain number of lectures have been retained on economic theory and the experience gained from Italy's economic development. Such a combination of theoretical and practical instruction is considered indispensable for intelligent managerial functioning.

In addition to training young graduates embarking on their first jobs, SVIMEZ from 1965 decided to hold refresher courses for those already employed in organizations and businesses. To the aforementioned programme there were therefore added short courses for such personnel lasting from four to seven weeks (see appendix C). Because of their duration, these courses do not take students away from their normal activities for too long a time. They also concentrate the instruction on specific subjects of the economics of production. A further follow-up activity that SVIMEZ has in mind will make it possible to maintain contact with students and assist them in progressively integrating their knowledge.

Parallel with training courses for Italian students, in 1960 the Centre for Economic Development Studies started a system under which foreign researchers and experts could spend a study period at the Centre to examine the experiences gained in southern Italy in the fields of economic, industrial, and agricultural development. Scholarships are offered to foreign students to enable them to study with SVIMEZ.

There have also been two phases in the assistance to foreigners. In the first, which ran from 1960 to 1963, the following opportunities were offered:

(*a*) to undertake special research in Italy on problems of economic development policy;

(*b*) to take part in SVIMEZ training courses;

(*c*) to study the operations and achievements of Italian institutions dealing with economic development, especially in southern Italy.

In these ways, officials of ministries and public administrations have been assisted, as well as experts and researchers coming from various countries, especially those in process of development who are interested in specific problems.

Among the investigations carried out at the Centre by foreign experts, the following are of special interest:

(*a*) "Development policies for Southern Italy", by H.B.Chenery. This is the elaboration of an inter-regional development model and provides an interesting analysis of the results achieved in southern Italy through assistance policies over the past ten years; it can also be utilized to assess alternative policies of economic development.

(*b*) "Econometric model of Italian post-war development", by G.Ackley. Here the results are given of research directed towards interpreting the causes of the development of the Italian economy during the nineteen-fifties by means of an econometric model, partially divided into various sectors. The rapid and constant increase in income during the period under review is "explained" by the model on the basis of the equally rapid and constant development of the "autonomous" components of the effective demand which the author singles out under the headings of public expenditure, net exports, fixed investments in agriculture, in building and, in part, in transport and communications.

Prior to 1964, ninety-six experts had been assisted by the Centre in examining the Italian development experience. All these were guests of the Centre for periods ranging from two to ten weeks.

In 1964, a new type of assistance was offered with the organization of courses for groups of foreign experts and researchers having interests in common and speaking the same language. Such courses illustrate the problems that Italy faces in the development of the south.

Consideration is also given to the importance of Italy's experience in working out policies for the rebirth of its depressed areas for countries which today must plan for similar assistance. Through these courses, therefore, which deal with problems and cases of development processes actually under way, SVIMEZ intends to make an original contribution for those who are engaged in promoting development in their own country and who have already had the necessary theoretical and practical training in the numerous institutions now engaged in this work in various European and extra-European countries. Students are selected through direct agreement with international organizations and institutions such as the United Nations, the Organization for Economic Co-operation and Development (OECD), the Organization of American States, and the Institut international de recherches et de formation en vue du développement harmonisé (IRFED).

It should further be mentioned that, in addition to lectures, there are small group discussions (from six to seven people in a group), seminars, and round table discussions at which the problems dealt with in the lectures are further examined. These are entrusted to members of SVIMEZ, who contribute their own research experience, and to managerial cadres from the public bodies and institutions working for the development of southern Italy, who thus have their practical experience to contribute.

Of the four courses so far held, the first two – one in French and the other in Spanish – took as their subject development experience in Italy, with particular reference to southern Italy (see appendix D). The other two, both in Spanish, dealt with more specific subjects: agrarian reform carried out in Italy and Italian industrial development policy (see appendix E). Thanks to this new activity, it has been possible to effect an increase in efficiency. This is expressed in the rise in the number of persons assisted. Between January 1964 and May 1965, there were 114 of these, of whom eighty-seven took part in *ad hoc* courses.

The students attending the four courses may be divided by their countries of origin as follows: Algeria, 5; Argentina, 7; Bolivia, 3; Brazil, 6; Cameroons, 1; Chile, 2; Colombia, 5; Congo, 6; Costa Rica, 1; Ecuador, 2; Ethiopia, 1; France, 2; Guinea, 1; Haiti, 1; India, 1; Indonesia, 2; Ivory Coast, 1; Madagascar, 1; Mexico, 5; Morocco, 2; Nigeria, 1; Pakistan, 2; Paraguay, 1; Peru, 9; Portugal, 2; Senegal, 1; Somalia, 1; Spain, 12; Turkey, 2; United States, 1.

B. Conclusion

The training programmes undertaken by SVIMEZ over the past seven years, through a process of natural maturing, may be said to have led to the following results. On the one hand, there has been a development and transformation which can be seen in our country resulting from spontaneous processes and from sectoral and inter-sectoral assistance to this end. On the other hand, SVIMEZ has accumulated an important volume of information which can help to clarify the problems raised by the processes of development and transformation. In other words, it appeared the natural thing to do to make use of this double set of facts and experiences in training young people who are called upon to interest themselves in the problems of Italian development and the development of other countries.

At first it was thought that the training programmes undertaken by SVIMEZ should be concerned principally with the collation of the Italian experience, within the frame of economic theory, and of research conducted on this subject. It was thought that such collation could serve two functions. It could provide the data for the evaluation and interpretation of the processes and the assistance already undertaken. It could also enrich the results progressively achieved by economic thinking on development. These considerations gave shape to the first courses for Italian students and assistance to foreign research workers and experts.

Subsequently, when the development of Italy, and of southern Italy in particular, had reached a more advanced phase, marked by a multiplicity of initiatives in many sectors, if not of a real development mechanism, the considerations which had previously orientated SVIMEZ in the formulation of its training programmes gave way to other ideas which were felt to be more urgent.

On the one hand, as the primary phase of setting the development of the backward areas of the country in motion was over, and as considerable productive capital had already been built up in southern Italy, another problem of prime importance emerged. This was to ensure that the operations under way could proceed efficiently and expand steadily. This led to the decision to orientate the SVIMEZ courses for Italian students towards training and refresher courses for managerial and intermediate cadres of the production units and administrative organs and institutions upon whom, at varying levels, rested the responsibility for carrying out and developing production activities.

On the other hand, the enrichment and maturity of the Italian development experience, together with the variety of assistance and solutions worked out for this purpose, counselled a change in the direction of the assistance provided to foreign research workers and experts. It was, in fact, thought to be of the greatest interest to make a comparison between the Italian experience and the various economic, social, and institutional conditions in developing countries which could find in that experience points of reference bearing upon the objectives of the decisions they were required to take.

The new orientation given to the courses for Italian students and the assistance provided to foreign research workers has been made possible through the fact that in Italy and other countries there are now bodies which have taken the initiative in furnishing the necessary theoretical bases for the study of problems of economic development. For Italy, it is especially satisfying that such initiatives may be considered as having been prompted by the example given by SVIMEZ since 1958, the year when its training programmes were launched.

APPENDIX A

Training and specialization course on problems relating to the theory and policy of economic development (1958)

A. Elements of the theory and history of economic development

1. Theoretical principles:

   (a) Introductory;
   (b) Theory of the firm;
   (c) Prices and market structures;
   (d) Theory of international trade;
   (e) Economic equilibrium and input-output analysis;
   (f) National accounting;
   (g) Macro-economic analysis and theory of employment;
   (h) Macro-dynamic models;
   (i) Keynesian theory and policy;
   (j) Linear programming;
   (k) Theory of economic policy.

2. Introduction to the study of economic development:

   (a) History of the theories of economic development;
   (b) History of world economic development.

B. Under-developed economies and development planning

C. Economic development policy

(a) Problems of programming;
(b) Relations between agriculture and other activities;
(c) Financing of industrial development;
(d) The theory of public enterprise;
(e) Land reform and the development of backward countries;
(f) Economic relations between under-developed and other countries;
(g) International capital movements and financing of foreign trade;
(h) Input-output analysis and its application;
(i) Programming techniques with special reference to the construction of demand schedules.

D. Italian economic development

1. Outline of Italian economic development.

2. Italian economic problems:

   (a) Income, consumption and investment;
   (b) Employment, unemployment and labour force;
   (c) Labour productivity;
   (d) Structure and problems of agriculture;
   (e) Structure and problems of industry and tertiary activities;
   (f) Money, credit and public finance;
   (g) Italy's economic relations with other countries;
   (h) The south.

3. Italian economic policy:

   (a) Post-war economic policy up to 1954;
   (b) The "Vanoni plan" and present development prospects.

4. Research papers:

   The students, in addition to attending the lessons, carried out a series of investigations under the guidance of the staff of SVIMEZ and the Centre. The following subjects were dealt with:

   Literature on southern Italy and the backward areas;

   Original accumulation in under-developed countries;

   State-controlled industry in Italy, with special reference to the development of the south;

   Italian post-war economic policy;

   Price formation in a planned economy;

   The technique of linear programming;

   The industrial holdings of the Italian State;

   Development planning in Brazil, with special reference to trade with Italy and its prospects;

   Sample investigation into the structure and movements of inventories in retail trading;

   An attempt at applying a linear programming model to an automobile factory;

   Measures in support of Italian agriculture.

5. Special courses:

   A series of thirty-six optional lessons on mathematics and statistics had the purpose of helping the students fully to understand the subjects dealt with in the course on economic development and to carry out their own research work. The curriculum was the following:

   (i) Elements of mathematical analysis

      (a) Analytical geometry;
      (b) Linear equations;
      (c) Relative maxima and minima of one-variable functions;
      (e) Maxima and minima of multi-variable functions.

   (ii) Elements of statistical analysis

      (a) Collecting, screening and tabulating of data;
      (b) Series;
      (c) Characteristic values, averages, medians, quartiles, deciles, standard deviation;
      (d) Theory of statistical correlation.

APPENDIX B

Training and specialization course on problems relating to the theory and policy of economic development (1965)

Lecture programmes

A. Regular courses

1. Economic theory of development:
    - (a) General economic equilibrium;
    - (b) Factors for economy of a welfare economy;
    - (c) The Schumpeter theory of development;
    - (d) Keynesian critique of the classical theory of employment;
    - (e) Macro-economic models of development;
    - (f) Input-output analysis;
    - (g) The position of the State in the economy according to modern formulae of economic policy;
    - (h) Economic development as a problem of the advanced and backward economies;
    - (i) Problems of the accumulation of capital in developing countries;
    - (j) The criteria for the choice of investments.
2. Economics of production in a developing society:
    - (a) Industrial production;
    - (b) The role of industrialization in development policies;
    - (c) Middleman and publicity activity;
    - (d) Agricultural production;
    - (e) Role and position of agriculture in economic development;
    - (f) Credit activity.
3. Italian economic development:
    - (a) The Italian economy from 1861 to 1945;
    - (b) Problems existing at the end of the Second World War;
    - (c) Economic policy during the phase of reconstruction;
    - (d) Economic policy choices during the nineteen-fifties: sectional aid policies;
    - (e) First unitary formula of a development policy: the Vanoni plan;
    - (f) Economic policy after the Vanoni plan;
    - (g) Modifications in the Italian economic system in the nineteen-fifties;
    - (h) Present problems of the Italian economy;
    - (i) Studies and research activities in Italy relating to problems of development:
      The Matrix of the Italian economy;
      Development models of the Italian economy;
      Structure and dynamics of the labour force;
      Estimates of private consumption in Italy in the ten years 1960-1970.

B. Complementary courses

1. Theory of production:

   Technical aspect;
   Economic aspect.

2. General mathematical analysis:

   Decisive factors and linear system;
   Functions, limits and derivatives;
   Maxima and minima;
   Analytical geometry.

3. Linear programming:

   The direct problem;
   The dual problem;
   The simplex method of solution.

4. Economic statistics:

   Concept of the average;
   Recession and correlation;
   Interpellative techniques;
   Price indices; methods of calculation used by ISTAT;
   Analysis of distribution of income; prices and distribution curve of income;
   Analysis of demand; elasticity of demand curve;
   Decision in a time of uncertainty.

5. National accounting:

   National income: concepts and surveys;
   Examination of the systems of survey of the R.N. adopted in Italy;
   Space and time comparison of the R.N.;
   Historical evolution of the principal aggregates of the Italian national accountancy (income, consumption, investments);
   Utilization of national accounting data in preparing programmes.

APPENDIX C

The SVIMEZ course on problems of industrial enterprises

4 October to 19 November 1965

Introduction to the economy of industrial enterprises:

Economic system in which the industrial enterprise works;
Ownership, control and management of the enterprise;
Formation of enterprise decisions;
Organization of the enterprise.

Labour and wages:

Productivity; Formation of wage rates;
Wage systems.

Market and prices:

Price in the various market structures;
Process of formation of prices by enterprises.

Investments and plant:

Calculations on the profitability of investment;
Criteria of choice in plant programming and research into most profitable size.

Production and costs:

Organization of the productivity process;
Production costs — characteristics and classification;
Fixing costs of products — standard costs.

Financing the enterprise:

Sources of finance — borrowed capital — own capital;
Auto-financing.

Assessing the value of enterprises:

Yearly balance sheet;
Analysis of the enterprise's financial position.

The commercial enterprise:

Economy of commercial activity;
Industry-distribution relationship.

Banking problems:

Development of industrial credit in Italy;
Assessing credit rating for industrial loans;
Problem of guarantees for industrial credit, from the legal aspect.

APPENDIX D

Course on the experience of industrial development in southern Italy

List of conferences

1. The industrialization problem within the historical framework of the question of the south.
2. Agriculture in southern Italy.
3. Southern migrations.
4. Pre-industrialization policy carried out by the Cassa per il Mezzogiorno.
5. Agricultural development policy.
6. Industrialization policy.
7. Siting of new industrial initiatives.
8. Criteria for the creation of incentives.
9. Incentive system for the industrialization of the south.
10. Industrial credit.
11. Technical assistance to industrial enterprises.
12. Industrial zones and consortia.
13. Technical and economic problems of the development of an industrial pole.
14. New technical and economic orientations of the development of an industrial pole.
15. Development of the steel industry by public enterprise.
16. Results achieved and obstacles encountered in the industrialization of southern Italy, and future lines of development.

APPENDIX E

Course on the Italian experience in agrarian reform

List of conferences

1. *General economic situation and conditions of Italian agriculture at the time of the promulgation of the reform laws*

   Structure of the economic system and labour force. Agricultural population and underemployment. The land-tax and contractual structure. Subsistence economy.

2. *Antecedents of reform*

   The land reclamation and colonization experience between the two wars. The principle of reform is contained in the Italian Constitution. Special measures prior to the promulgation of the reform laws: law for the occupation of uncultivated land, liability of manual workers to tax, laws relating to small-holders; draft general reform laws; promulgation of the reform laws.

3. *Localization and operative instruments of reform intervention*

   Total area and nature of the land selected. Powers and organizational structure of the authorities, responsible for implementing reform legislation.

4. *Expropriation of the land*

   Decision on the amount to be expropriated; determination of indemnity and its payment; exemptions from expropriations.

5. *Assignment of land*

   Choice of assignees; decision on the size of the new farms and the division of the expropriated land.

6. *Assignment contracts*

   Characteristics of the contracts; decision on the charges to be borne by the assignees.

7. *Financial assistance to the assignees*

   In the initial phase and in succeeding phases.

8. *Co-operation*

   Principles of co-operation under the reform legislation; how such co-operation differs from the traditional type of co-operation.

9. *Co-operative organization in the areas covered by the reform laws*

   Forms of co-operative organization. Action of the co-operative.

10. *Financing action under the reform laws*

    Financing expropriation. Financing public bodies responsible for implementing reforms and related legislative provisions. Division of funds among various public bodies. Relationship between the Cassa per il Mezzogiorno and the public bodies administering the reform laws. Time relationship between financing and operative requirements. Other revenues of public bodies: inherited income, provisional ownership of the land, special administration, etc. Execution of land reclamation works concessions.

11. *Technical assistance to assignees*

Services of public bodies administering reform legislation. Criterion for localization of inter-enterprise services. Farm equipment. Choice of type of farming.

12. *Costs of reform legislation*

Institutional aims of reform: complete renewal of social and economic structures (it would be wrong to make a comparison in terms of costs between reform transformations and private transformations). Reflection of the dispersion of expropriated land on reform costs. Phase displacement between financing and operative requirements and its relative cost. Incidence on costs of the selection criteria of assignees. Division of costs: infrastructures, farm works, endowment grants, advances for cultivation. The human factor in the cost of training. Cost of investments in land reclamation and infrastructures in the reform zones undertaken under the budgets of the Ministry of Agriculture and the Cassa per il Mezzogiorno.

13. *Effects of reform*

Direct effects: transformation of the environment and of the human factor. Increase in employment and in income. Indirect effects: increase in the level of civilization and modifications in social relationships.

14. *Present problems in the area affected by reform legislation.*

PROBLEMS OF DEVELOPING ADEQUATE TRAINING PROGRAMMES IN THE FIELD OF PROJECT PREPARATION AND EVALUATION

by L. J. Zimmerman *

A few years ago, the Industrial Development Division of the United Nations (which expanded into the Centre for Industrial Development), undertook an inquiry into existing training facilities in the field of industrial programming. The aim of the questionnaire, distributed among a great many training institutes, was to find out how many special courses were organized for training in project preparation and evaluation. The number of special courses designed for training in project preparation and evaluation was found to be very limited indeed.

Because the organizers of the questionnaire (the present writer was among them) assumed at the time that lack of teaching material, that is, of case studies of industrial projects in developing countries, was one of the main reasons for these deficient training facilities, they also asked a few questions about the availability and possible dissemination of such studies. It was found that at that time only the Economic Development Institute of the International Bank for Reconstruction and Development (IBRD) had a great many case studies at its disposal and had, therefore, been able to organize special courses in project evaluation with great success. The director, John H.Adler, declared the willingness of the Institute to disseminate all the non-restricted teaching material at its disposal. Most other institutes stated that very little teaching material was available.

A few years have elapsed since, and the Catalogue of Social and Economic Development Training Institutes and Programmes, 1965, prepared by the Training Division of the OECD (Organization for Economic Co-operation and Development) Development Centre opens the possibility of reviewing this problem again.[1] We find a few newcomers in the field, with special emphasis on project preparation and selection, for instance, the Centre de perfectionnement pour le développement et la coopération économique et technique,[2] the Indian Institute of Management,[3] the Netherlands Institute of Social Studies,[4] the Graduate School of Public and International Affairs (University of Pittsburgh),[5] the Asian Institute for Economic Development and Planning,[6] and the Centre for Latin America Monetary Studies training programme for development agencies.[7]

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* Dean, Netherlands Institute of Social Studies.

[1] Cf. pp. 22, 24, 37, 40, 44, 50, 84, 95, 113, 134, 138, 190, 205, 213, 214, 226, 238, 252.

According to the 1965 Catalogue, these institutes devote two to six months to the preparation and evaluation of projects during special courses. It therefore goes without saying that considerable progress has been made during the last few years, and I assume that the activities of the Centre for Industrial Development of the United Nations, together with those of the Economic Development Institute of the IBRD, have done much to promote these new developments. However, as soon as we compare the training facilities available in macro-economic programming with those available in the field of micro-economic programming, we have to conclude that those in the field of project preparation and evaluation are still inadequate.

The purpose of this paper is to find out why this is the case and to indicate ways and means to improve the situation. It will be apparent from what has been said above that this paper will concentrate on the problems of developing adequate training in the field of project preparation and evaluation and not on the more general problems of training for economic administrators.

First of all, we have to discuss the relationship between macro- and micro-planning. To do so, the following graphical representation of the planning process may be useful.

Although the names given to the various stages of planning: general macro-economic level, macro-economic sector analysis, industrial planning, blueprinting and contracting, may be subject to criticism, we assume that they indicate clearly the sequence of the planning process. We hope that the graphical representation also elucidates the relations between planning on the macro- and micro-levels. First, let me say a few words about planning on the macro-level, that is to say, about the first three stages.

The reason why much more attention has been given so far to training for macro-economic planning than to micro-economic planning may be, in part, that planners have always stated that a development plan is more than the sum total of a series of projects. Planning means a comprehensive set of consistent measures leading to specific targets. It therefore starts from aggregates and goes down into details: from aggregates to sectors, from sectors to industries, from industries to individual projects. But because most development plans do not publish micro-details, they are very often by-passed in the theory of planning.[8]

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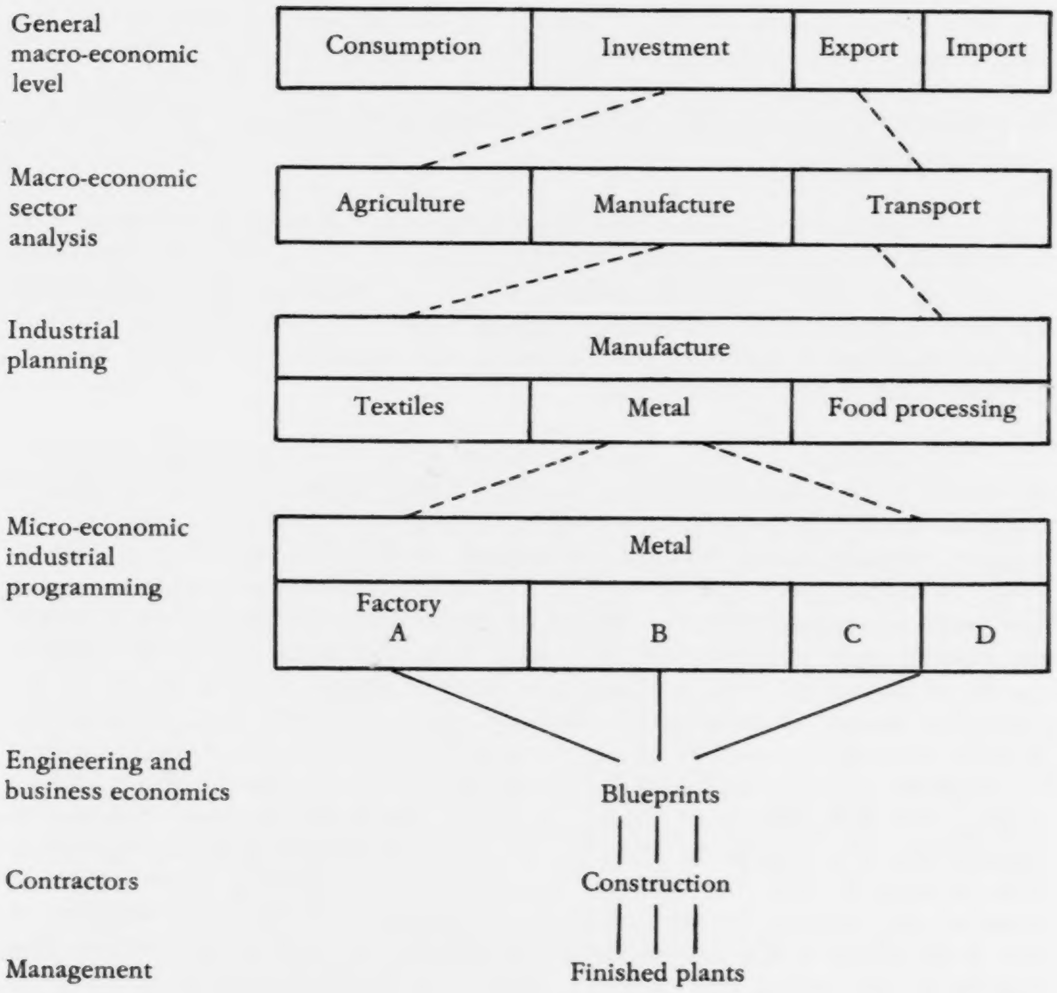
[2] *ibid.*, p. 50.
[3] *ibid.*, p. 84.
[4] *ibid.*, p. 113.
[5] *ibid.*, p. 190 (in existence since 1959).
[6] *ibid.*, p. 213.
[7] *ibid.*, p. 226.

Graphical representation of the planning process


General macro-economic level
Consumption
Investment
Export
Import
Macro-economic sector analysis
Agriculture
Manufacture
Transport
Industrial planning
Manufacture
Textiles
Metal
Food processing
Micro-economic industrial programming
Metal
Factory A
B
C
D
Engineering and business economics
Blueprints
Contractors
Construction
Management
Finished plants

In the second place, it must be realized that although planning theory assumes that projects competing for execution always ask for more investment funds than are available, in reality so few well-prepared projects are available in planning bureaux that they are often executed without further discussion.

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[8] Cf. Jan Tinbergen, *Central Planning* (New Haven, Yale University Press, 1964), p. 129, where the number of analyzed projects per sector is given; for "industry", we find the following data: Poland, 43; Turkey, 40; Burma, 10; Chile, 9; and Iran, 1. For other countries no data are available.

This holds true especially when only one very big project, for instance, a high dam or a blast furnace (symbols of national prestige or pet projects of the military) is under consideration. Therefore priority criteria are very often only of theoretical, not of practical importance. But in the third place, and this is for us the most important aspect, it is much easier to teach macro-economic planning than project preparation and evaluation.

To demonstrate this, let us compare the teaching in both fields. I hope to demonstrate that it is not so much the lack of teaching materials but the lack of good teachers that has handicapped training in project evaluation. Availability of good teachers especially is what gave — and still gives — the Economic Development Institute of the IBRD its comparative advantage. We shall come back to this point later.

On the macro-economic and the sectoral level, planning is so complicated and has to rely on so much quantitative analysis that it is practically impossible to set up a consistent plan without the aid of mathematical models, which serve as a control on the consistency of the planner's thinking. We may mention, as basic techniques underlying these models, the input-output analysis, demand estimates and population forecasts.

The making of these models requires a thorough knowledge of general economic theory, and the planner should be well versed in statistical methods such as national accounting, and have a working knowledge of sample surveys. It goes without saying that the making of models also requires a fair knowledge of mathematics and of methods of verification and identification, which are parts of econometrics. Although a good planner further needs a feeling for human and political relations, much common sense and much intuition (none of which can ever be "taught"), a whole library of publications on the technical aspects of planning is available and a relatively small team of adequately trained economists, econometricians, and statisticians must be able to teach the planning techniques. Because all the topics mentioned above have during the last ten years found a secure place in economic training in universities, the supply of teachers for macro-economic planning courses at this moment is such that it cannot be considered an obstacle to the establishment of new courses. As mentioned above, general textbooks are available and the development plans of various countries may be used as case studies. The quality of the course will naturally depend upon the quality of the teachers, but this holds true of all postgraduate training.

Let us now look at the requirements for industrial economic advisers. They come into the picture – as our graphical representation of the planning process indicates – once the total sum of industrial investments has been determined by the macro-economic planners[9] and eventually also after a rough indication of the investments in the various branches of industry has been given.

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[9] There exists of course communication between the macro- and micro-planners when those decisions are made.

In a planning unit we normally find the industrial economic advisers in the project division, where general economists, engineers, business economists, statisticians and geographers work together. Their task is to prepare and evaluate projects for individual enterprises, and to determine their size and location. They therefore need an insight into technology as well as into business economics, into interindustrial relations as well as into the theory of location, into market analysis as well as into problems related to the supply of the various factors of production.

As far as these problems are concerned it is not too difficult to set up a curriculum for a course in industrial development programming; and teachers for this part of such a course will normally be available. Because economists as well as engineers can be expected to attend a course on industrial programming, the course has to start with a general survey of cost accounting and business finance, as well as with a general introduction to technology.

(a) *Cost accounting:* fixed costs, variable costs, average and marginal costs, break-even point, size of production and unit cost, optimal size of a firm;

(b) *Business finance:* fixed and circulating capital, working capital, how to finance a new plant, cash-flows, amortization;

(c) *Technology:* what is production from a technical point of view, choice of techniques (especially related to the size of production); size of production and costs (six-tenths rule), skilled and unskilled labour.

During this introductory period, it would also be useful to provide courses in statistics and mathematics, because they are needed not only in the classes of business finance, but also for market analysis, and the semi-output analysis.

The next topic, of paramount importance for industrial programming, is market analysis covering price and income elasticities, domestic market family budgets, demand related to the development plan, interindustry demand and foreign demand. Case studies are needed here, but they are available. I have the impression that mistakes in market projections have caused failures of many industrial projects in developing countries. Exercises in this field are therefore highly recommended. Classes in macro-economic planning and in input-output analysis are also needed in order to build a bridge between micro- and macro-planning.

As a last topic of the general part, we have to mention "preconditions for industrial development". This topic can be subdivided into the four following categories: political; social; physical; economic, which are often grouped together under the heading of "industrial climate". It must be realized that, as long as certain minimum preconditions are not fulfilled, industrialization cannot take place at all. However, the literature on the topic of industrialization usually contains only quite vague generalities on this point. It goes without saying that political stability is a precondition for industrialization, as are the "propensity to accept innovations", the availability of skilled labour, etc; but we shall look in vain for advice on how to create such a climate where it does not exist.

So far, I have discussed topics that are normally dealt with in development institutes, and it is usually assumed that enough literature is available on those various fields. The great problem seems to have been the lack of teaching materials as far as case studies in project preparation and project evaluation are concerned. In any case, in the United Nations questionnaire mentioned above, special attention was given to the availability of case study materials, and the general complaint of the development institutes was that such case materials were lacking. If we look, however, at the *Catalogue of Investment Information and Opportunities* published by the Agency for International Development (Washington, D.C., May 1965), we find that some 1,400 original feasibility studies provide information on the market, total capital required, projected annual sales, production, finance, economic viability, manpower, location and other relevant data. The United Nations Centre for Industrial Development is also working hard to make available all relevant data needed for pre-investment studies in various countries.[10] But although all this is known without doubt to all who are interested in the teaching of industrial programming, only very few courses have so far been organized in this field and many are the complaints that teaching material is lacking. And even if much material were disseminated for teaching purposes, courses in project evaluation would still be very difficult to organize effectively.

I have some experience in this field. For years I have organized courses in macro-economic planning, and it has always been easy to find lecturers (even on the most specialized topics) in this field. In project preparation, the situation is completely different, because only the man who knows the specific project, that is, the specific process of production, and further knows its specific problems in developing countries, is able to do this job. And these technical experts are often very bad lecturers and even more often are simply not willing (or not allowed) to discuss "their" case study. The Economic Development Institute of the IBRD forms an important exception, because many different kinds of experts are available within the Bank itself.

In the industrial programming course of the Netherlands Institute of Social Studies, I have tried to solve this problem in the following way. We contact a great many firms that have constructed factories in developing countries and ask them to discuss (not at our institute, incidentally, but in their factories) problems of market analysis, size of production and unit cost, size of production and investment, etc. and further to discuss problems related to the construction of the plant in developing countries, location, infrastructure and so on. We also provide them with a questionnaire in order to obtain data needed for writing the final report and evaluating the projects. A group of course participants then write the final report, and the feasibility of the project is again discussed in class, now under the guidance of the class leader.

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[10] See ***Studies in Economics of Industry, I. Cement/Nitrogenous Fertilizers Based on Natural Gas*** (United Nations publication, Sales No.: 63.II.B.3) which contains all that is needed except data on market analysis.

I have not the slightest objection to disseminating this material in the near future, but I am convinced that, without the introduction of the real technical expert, this material will never come to life. When individuals from various parts of the world, many of whom are specially interested in certain kinds of industries, are brought together in a course, a great variety of cases have to be discussed, and only technical experts are able to do so adequately. Of course, other institutional aids can be quite useful in teaching courses on industrial programming. The itinerant seminars of OECD, the various publications of the Centre for Industrial Development of the United Nations, as well as the aforementioned materials of the Agency for International Development, serve to improve the level of training. The forthcoming OECD manual on project preparation will fill a recognized gap in training materials. However, for the time being these kinds of courses are best organized in industrialized countries (once again, this is in contrast to courses in macro-economic planning), and the further dissemination of teaching materials can affect this situation to only a limited extent.

REVIEW OF METHODS USED IN THE FORMULATION AND IMPLEMENTATION OF INDUSTRIAL DEVELOPMENT PROGRAMMES AND PROJECTS; IMPLICATIONS FOR THE FORMULATION OF TRAINING PROGRAMMES IN INDUSTRIAL DEVELOPMENT

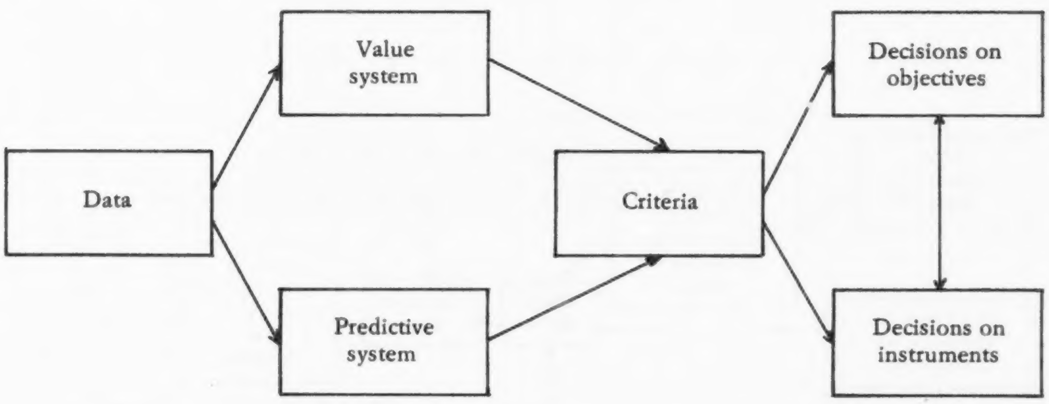
by Morris J. Solomon *

A. The decision-making planning-action feed-back cycle

Although the feed-back cycle has been known to man for quite some time, the second half of the twentieth century may very well be known as the age of feed-back. Here is a concept and orientation which is fundamental to advances in a great variety of fields. Its conscious and explicit use promises to create a revolution in learning and production. Together with some insights from modern decision theory, it promises to make readily available keys to good management. For the truth is that effective management has been a painfully rare commodity even in the developed economies.

To simplify matters, let us first talk about the process of making decisions. The process can be represented in static terms as follows:

Chart 1. Process of decision-making



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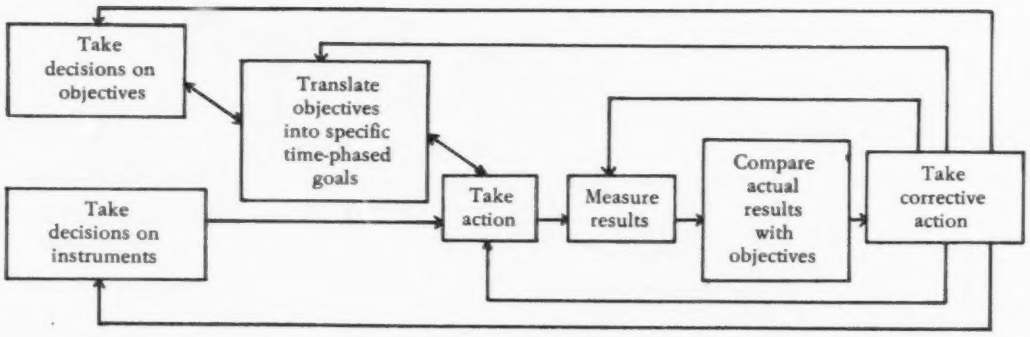
* Chief, Operations Research Branch, Statistical Research Division, United States Department of Commerce.

The effectiveness of decision-making depends on the soundness of each item involved. Any link in the chain, if sufficiently defective, can produce poor decisions. Data are measurements of the past. A value system relates to the importance attached to alternative achievements. A predictive system provides an operational procedure for projecting data of the past into the future. Criteria are specific indexes of desirability which one is willing to use to reach decisions. Decisions on objectives determine what values one will try to attain. Decisions on instruments determine what policies, organizations or methods one will use to attain the objectives. Each time a decision is made, a choice is made among alternatives. The alternatives one considers are based on available data, and the predictive system and the ingenuity employed in framing alternatives. The criteria applied to alternatives are based on the set of values, the data and the predictive system leading to decisions.

An interesting and important consequence of the chain-like nature of decision-making is that one cannot afford to become unduly preoccupied with one element in the process. A balance of effort is required if the end result is to be satisfactory. For example, it does not make sense to invest substantial resources in data collection and processing if these are not to be used in a predictive system or if the predictive system is to be poorly developed, or if the data is not to be useful in a predictive system. We can take any item in chart 1 and make similar statements with respect to any other items. A particularly troublesome item is the value system. This is so because the source of the value system is ultimately the political authorities, a group that is relatively inaccessible. If the process of decision-making is to be consistent and effective, the values of the political authorities must be integrated in the process, implying an interaction between specialists and political authorities which is difficult to achieve. This will be discussed more fully at a later point.

The decision-making process illustrated above is static and can be regarded as leading to the planning-action cycle illustrated in chart 2.

Chart 2. Planning-action feed-back cycle


Take decisions on objectives
Translate objectives into specific time-phased goals
Take decisions on instruments
Take action
Measure results
Compare actual results with objectives
Take corrective action

The results achieved over a period of time in any activity will depend on the way the planning-action cycle is carried out. This planning-action cycle is called a feed-back cycle and is of fundamental importance in any activity. A starting point in the planning-action cycle is a statement of objectives. These objectives, generally formulated at the top level, are not detailed or in operational form; they must be translated into more specific time-phased objectives that can be scheduled and acted on by persons with narrower implementation responsibilities. Along with objectives and specific operational goals, we have to determine the instruments that will be used to reach these goals. The instruments can be policies on personnel, incentives, tariffs, taxes or administrative procedures. There must be a basic harmony among the objectives that have been set, the detailed operational goals and the instruments that have been chosen. This harmony calls for close and uninhibited communication and interaction among political authorities and technical specialists. The action that each takes must be appropriate to the objectives, specific goals, and instruments that have been decided on.

The specific goals must be defined in meaningful and measurable units and the measurement of results should be defined in the same units, so that a comparison of the goals and actual results can be readily made, and so that corrective action can be taken on the basis of this comparison. If we cannot measure even approximately what we hope to achieve, our goals are faulty or at least non-operational. But it is not sufficient for goals to be measurable. For example, one might be able to count the number of latrines that a community development programme in India was able to have built, but their use and their effect on actual sanitation may be quite another thing.

Corrective action can take a variety of forms, such as:

(*a*) Making more detailed measurements;
(*b*) Pointing out to responsible personnel the shortcomings of their efforts;
(*c*) Shifting personnel;
(*d*) Taking disciplinary action such as rebuke, demotion or removal;
(*e*) Changing instruments (policies, procedures, incentives);
(*f*) Bringing more resources to bear on the weak elements;
(*g*) Revising goals or objectives.

Sometimes measurement of actual results indicates that the goals set were too modest, in which case the appropriate corrective action would be the upward revision of goals. The time unit used in scheduled goals should be sufficiently small so that, even if things go badly, the damage can easily be repaired or the delay made up. Here again, the effectiveness of the effort has a chain-like quality. The weakest link determines the strength of the entire effort. It is not sufficient merely to plan suitable objectives and goals or to plan and measure results. Only if the processes of planning, measurement and remedial action are completed can we be sure of an effective system. The decision-making process and the planning-action cycle are in fact linked in one system. Chart 3 sketches the relationships of the various elements.

Perhaps it would be well to discuss the whole system, item by item. Data on the past, when combined with the priorities of the value system and the

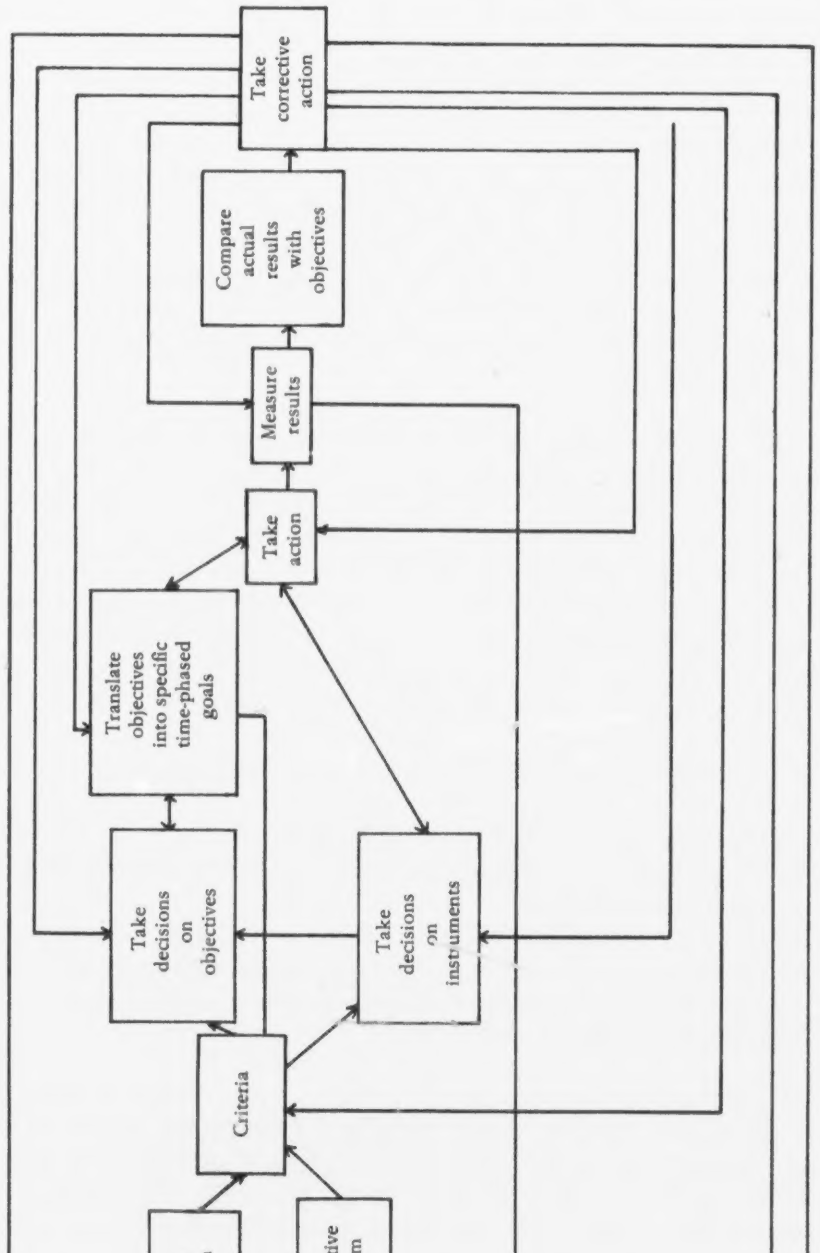

Data
Value system
Predictive system
Criteria
Take decisions on objectives
Take decisions on instruments
Translate objectives into specific time-phased goals
Take action
Measure results
Compare actual results with objectives
Take corrective action

Chart 3. Interaction of process of decision-making and the planning-action feed-back cycle predictive system, yield criteria that can be applied for deciding among alternative objectives and instruments. In addition to data on the past, one can make use of cost factors and technological relations. Thus data have a statistical and technical basis. The measurement of results of the immediate past should create new relevant data. The collection and processing of data must be highly selective with reference to the other steps in the cycle.

The value system is the set of priorities held by the decision-maker for alternative processes. The value system of the political authorities has ultimate force. It is important that their actual preferences should be faithfully incorporated in the criteria and that these, in turn, should be reflected in objectives, specific goals and instruments.

The predictive system in effect tells us how to project past data into the future. Many such projections are for hypothetical alternatives. The criteria are indices used for actually making decisions among alternatives.

By applying criteria, the decision-maker decides on objectives, such as raising the income level by a certain percentage annually, reducing the incidence of disease, or attaining a given literacy rate by a certain time. But to achieve these objectives in fact, we have to translate them into specific time-phased goals, such as putting into operation a certain number of plants, increasing the yield by a certain percentage, initiating a spraying programme, etc.

While objectives are to be regarded as of fundamental importance, even these are subject to change. For the political authorities may start out with objectives which they regard as desirable and attainable. As experience is obtained, some objectives that were regarded as desirable may be found to be interfering with other objectives that are considered more urgent. Thus corrective action may take the form of subordinating initially desired objectives to other objectives. The criteria will also lead to decisions on instruments such as tariffs, industrial promotion, colonization policies, taxes, etc.

It is very easy for the various elements – data, value system, predictive system, criteria, objectives, instruments and goals – to be inconsistent with each other. In practice, they can be harmonized only by considerable interaction between what is initially wanted and what can be obtained. As the planner learns that values in a dimension are limiting progress in another dimension, he re-orders the priorities. This re-ordering may come about because of contradictions in values which are highlighted by judgement, mental trial and error or experience. The possibility of advantageous trade-offs will often force radical shifts in the value system and objectives.

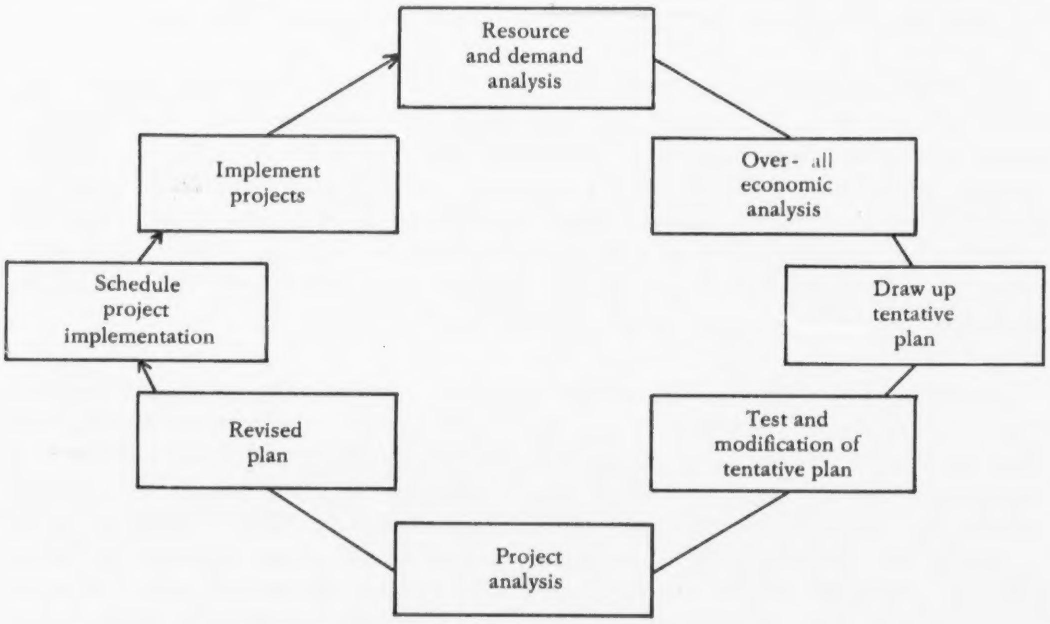
In taking action, it is important that those actually responsible either accept responsibility for the specific time-phased goals or that they amend those goals with approval of the higher authorities. The phenomenon of paper plans that have no relationship to actual events is a common and damaging characteristic of development in newly developing countries. The action taken should be modified appropriately to correct discrepancies between the goals that have been set and what is being achieved.

B. The cycle of economic development

Economic development consists of a series of steps which are illustrated in chart 4. The various steps form a cycle in which all are necessary for the achievement of economic development.

The resource and demand analysis can be thought of as a reconnaissance of the economy in which economic assets and liabilities are noted and implications for action are determined. An important result of such an analysis should be a flow of prospective projects and groups of projects. The approaches that Bryce has suggested in his book for generating prospective projects would be used in a resource and demand analysis.[1] The resource and demand analysis has to draw on the fields of economics, geology, agronomy, industrial engineering, public health, education and other disciplines.

Chart 4. Steps in econ. development


Resource and demand analysis
Over- all economic analysis
Draw up tentative plan
Test and modification of tentative plan
Project analysis
Revised plan
Schedule project implementation
Implement projects

The over-all economic analysis is a macro-analysis in which aggregates such as income, savings, investment, foreign exchange and foreign aid are projected so that the limits of a total plan can be set. In addition to the aggregate, estimates are made of sub-aggregates such as components of government expenditures (health, education, roads) and other investments by area, as well as sources of taxes and savings. Results from other steps such as project analysis, project scheduling and project implementation will affect these aggregates and sub-aggregates. A tentative plan is drawn up on the basis of all the other steps. The test and modification of the tentative plan is a determination of the consistency and realism of the tentative plan and the modification of the tentative plan accordingly. Again, one would bring to bear the results of the other steps towards a modified plan.

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[1] Murray D. Bryce, *Industrial Development, A Guide for Accelerating Economic Growth,* McGraw-Hill, New York, 1960, pp. 19-20.

Project analysis is the formulation of promising alternatives and the evaluation of such alternatives in a way which facilitates rational choice by the decision-makers. Project analysis necessarily uses the macro-plans as a take-off point. In addition, a project cannot properly be considered without reference to competing alternatives and therefore the formulation and evaluation of projects necessarily include consideration of whole sectors. For example, in considering a rayon plant one must take into account the effects on the cotton textile industry if there are to be important effects.

In practice, project analysis will take place at several levels of detail. One might be described as a rough screening process in which many possibilities are tested and the least promising prospects are eliminated from further consideration. Those projects that are not eliminated are given a more detailed and costly consideration. In both the screening process and the more detailed consideration of projects, what is required is an integration of economics, engineering, statistical market analysis and management considerations. It is rare for one man to have real competence in all these fields. Therefore it is important that those who plan projects should be able to communicate with persons who have complementary skills.

While the project is defined as the smallest unit of activity that can be separately planned, analysed, and administratively implemented, where a project affects or is affected by other projects, it is often necessary to consider a complex of projects involving a whole sector.

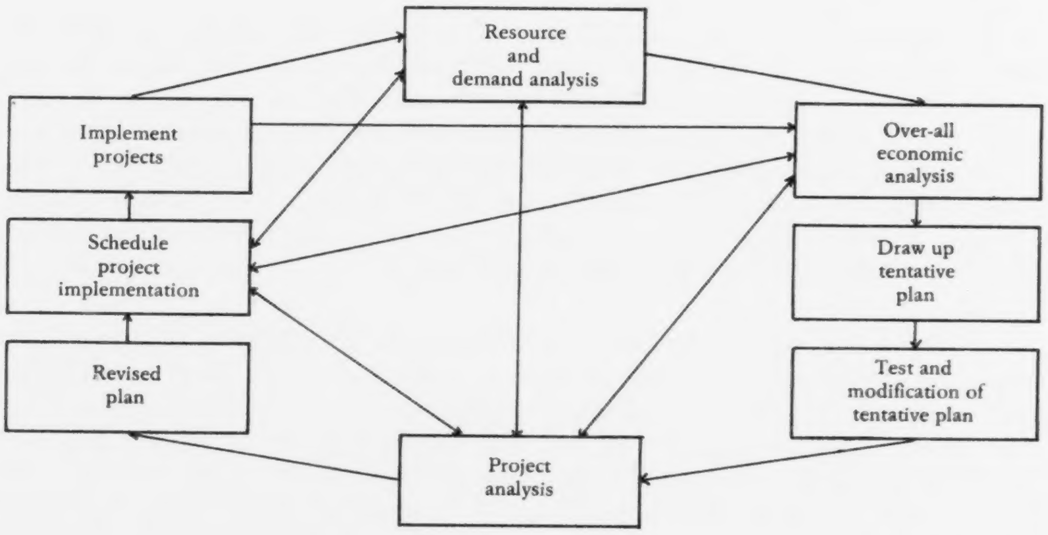
The planning of projects should include a schedule of implementation. The schedule of implementation will affect the other steps as will the actual implementation.

Macro-planning and micro-planning are complementary and mutually supporting. Macro-planning supplies data for micro-planning and vice versa.

If we wanted to express the cycle of economic development in a more realistic way which emphasizes the interactions, we would draw it as seen in the following chart.

Within each step there is need for communication among specialists of the same discipline and among different disciplines. But, in addition, the developments in each step must be communicated and integrated with every other step on a prompt basis. The problem of communication is especially difficult because the steps are likely to be performed by different jurisdictions. Developing effective forms of communication and designing organizations that will facilitate communication are two urgent and critical tasks.

Chart 5. Interactions among steps in economic development


Resource
and
demand analysis
Implement
projects
Over-all
economic
analysis
Schedule
project
implementation
Draw up
tentative
plan
Revised
plan
Test and
modification of
tentative plan
Project
analysis

C. Some common deficiencies in present economic development efforts

There is a tendency for effort to be concentrated in one or at most a few steps in economic development, particularly in the resource and demand analysis and the over-all economic analysis. It is common for a new planning group to spend years on the first steps, the resource and demand analysis and the over-all economic analysis, with the idea that only once these are "finished with", can the other steps be undertaken. This notion of precedence gravely harms the planning process. It overlooks the fact that macro-planning is never "finished" and that only by taking prompt account of interactions between macro- and micro-planning can the full cycle be effectively operated.

A by-product of this emphasis is that the planning effort is oriented towards publication rather than action.

The interactions among the steps of economic development are very slow or non-existent. For example, persons engaged in a resource and demand analysis are unlikely to communicate or bring into being suitable project analysis activity that is indicated by their findings. Project analysis activity is more than likely to be in another "department", which is regarded as inaccessible.

Reinforcing the above tendencies is an inadequate appreciation of the resources needed for project planning and implementation. The planning and implementation of projects requires a relatively large number of trained persons in the economy as compared to macro-planning.

In any particular step of economic development there is a lack of balance of effort and inadequate attention to harmonization among the parts of the process. For example, data collected is often not really very relevant to the predictive system or the criteria. The criteria are inconsistent with decisions on objectives or the value system of the decision-makers. The instruments are inconsistent with criteria and objectives. The actions are inconsistent with the decisions on goals. There is a poor relationship between scheduled goals and measurement and, last but not least, corrective action is very slow in forthcoming. In effect, the performance of the various parts of the decision process and planning-action cycle is variable, with very poor linkage between the parts. The poor linkage is marked among different specialists, and among different levels of authority. Perhaps most marked and decisive is the poor linkage of the political authorities to the technicians. In many countries the relations are extremely hierarchical with little interaction.

The gap between planning and doing is a problem in any society, but is especially urgent in the newly developing countries. The coupling of planning with doing is something which deserves special emphasis in designing training programmes and organizational arrangements.

The process of project analysis and implementation is probably the most deficient of all steps, and will require the greatest effort to remedy. For one, the number of skilled participants required is greatest. Present practice of project analysis either has no agreed framework or, if there is an agreed framework, it gives a variety of criteria that are contradictory with no basis of trade-off; [2] or the basis of aggregating criteria is not sufficiently meaningful to merit the genuine confidence of technicians or decision-makers. [3] In addition to poor project formulation and evaluation, there is poor implementation of projects.

D. Implications for the training of economic administrators

If the foregoing analysis of the process of economic development is correct, then any training programme must be directed towards a balance of strength among the various elements, with particular attention to providing suitable linkage among elements. I shall discuss training in terms of personnel and in terms of techniques. Three levels of personnel have to be trained, and only if all three are reached can an effective effort be launched. These three levels are: political authorities, senior technicians and working technicians.

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[2] Cf. *Manual on Economic Development Projects* (United Nations publication, Sales No.: 58.II.G.5).

[3] A good example is *Lineamientos metodológicos de la Política de Selección de Prioridades industriales del Infonac,* Instituto de Fomento Nacional (INFONAC), Oficina de Programación, Managua, Nicaragua, Jan. 1965.

1. *Training of political authorities*

The mere idea of training political authorities may appear strange to some. We tend to take the attitudes of political authorities as fixed. When we do so, we misjudge the dynamic potential of ideas and political authorities and rule out all hope for progress. The political authorities ultimately make the important decisions. Unless they have some minimum understanding of the rationale of the system used by the technicians, they cannot adequately discharge their functions as final decision-makers. They define the goals and, in large part, the instruments which the technicians work with in their day to day operations. In many cases, explicit consideration of the objectives and instruments in the context of actual operations will indicate the need for changes in government policies. Unless the top political levels become familiar with the impact of their policies in the specific context of project development, they are not likely to generate or permit the necessary changes. In terms of chart 3, without involvement by the top political authorities, corrective action is likely to be weak, with inconsistencies tending to persist.

Many of the existing instruments (tariffs, tax policies, industrial promotion policies, etc.) are barriers that are strongly entrenched in law, tradition and vested interest. Changes needed for economic development will often run counter to dearly held values and short-run political currents. Before political authorities take the difficult decision to make these changes, they have to be convinced that a strong need exists for such changes. They will not become convinced without becoming familiar with the specific effects of existing policies. While they need not become experts in detail, they should have an interest in, an appreciation of, and genuine acceptance of the framework used by the technicians and exercise their function of ultimate responsibility. One need only reflect on the nature of the inflationary process to appreciate the importance of a sufficient understanding by political authorities of the economic forces with which the technicians will be concerned. The realism and adequacy of the models used by the technicians become irrelevant unless the political authorities take them seriously.

In discussing the training of senior technicians, the ability to communicate with political authorities will be stressed. But communication is a two-way process. In newly developing countries, the distance between political authorities and technicians is especially great, with strong hierarchic patterns. Thus, without absolving the senior technicians of responsibility in the communication process, there is need for training programmes that will prepare political authorities for their role in the decision-making and planning-action cycle. The political authorities, of course, are relatively inaccessible. Just as senior technicians should be prepared to deal with political authorities, so the political authorities must learn how to use technicians. Working out realistic and effective programmes for top political authorities is a challenge of the highest order. The United Nations is in a unique position to sponsor such programmes. In discussing techniques, the specific approach that might be taken will be touched on, but obviously there is room for considerable experimentation.

2. *Training of senior technicians*

The planning and implementation of economic development involves skills and knowledge in a variety of fields such as engineering, economics, statistics, agronomy, geology, public finance and accounting. While senior technicians will be concerned with specialized fields, it is important that they should be familiar with related fields. In general, we may say that the broadening of the curricula that is taking place in the technical schools of the United States is a move in the right direction. For example, an engineer should have some acquaintance with statistics, economics and accounting, as well as the physical sciences. Some training in these fields would give him a greater capacity to co-ordinate different specialists under him and communicate with other specialists in other organizations.

While the academic training of future senior technicians should be broadened, it is unrealistic to expect academic training to be sufficient. Because so much depends on the linkages among the various activities, it would appear desirable that a seminar for senior technicians be held regularly, oriented towards specific goals of major activities and remedial action that appears necessary. An important function of some of the methods that we shall discuss will be to provide a basis for communication among the various steps of economic development and the various elements of the process of decision-making and the planning-action feed-back cycle.

The separation between planning and doing is a problem in any society. In countries with relatively little experience in implementation this is a special problem. An important training procedure would be to have future senior technicians start with a project in its planning stage and follow it through to completion, preferably under the direction of an experienced administrator.

There is no better training for a young specialist than to work on an important project with a proven and hard-driving administrator from the very beginning of the project to its completion. Outstanding administrators can make excellent use of five or six such young men, using them as trouble-shooters, treating their shortcomings as object lessons. In carrying out such a programme, it is important that the style of leadership be bold, that is, not afraid of making mistakes, but quick to acknowledge and correct its mistakes. This approach to training can yield early dividends and build administrators who will be conscious of the needed linkages.

If senior technicians are to forge new and better solutions, they will have to carry on a spirited and intimate dialogue with the decision-maker. Certain special conditions will have to be fulfilled before a suitable dialogue can take place. The decision-maker must regard the senior technician as an instrument to be used to achieve his (the decision maker's) goals. This role of tool is one which the senior technician must be ready to accept. Ordinarily, a decision-maker will make known his values, restraints and priorities in a relatively incomplete and vague manner. An important function of the senior technician is to put these values, restraints and priorities into the form of operational criteria, and in the light of these criteria to translate the objectives of the decision-maker into detailed, time-phased goals. Before doing this, he must formulate alternative goals and apply the criteria to these goals. The senior technician must be free to explore alternatives which relax restraints that have been set by the decision-maker. Only when the results have been made available is the decision-maker in a position to know what his restraints (part of his value system) are costing.

Freedom to explore the borders of initially forbidden territory is an indispensable condition for fruitful activity by senior technicians. This implies a certain open-mindedness on the part of the decision-maker. Obviously, decision-makers vary considerably in their receptivity. Some are so set in their ways and unrealistic in their expectations that there is virtually no hope of reconciling what is initially stated as wanted, with what can be obtained. But the inability of the senior technician to communicate can also, and often does, block co-operation between political authorities and senior technicians. While effective communication requires that the political authorities should regard the technicians as tools that are available for their use, senior technicians must preserve their integrity; they must be "true", in the same sense as any tool. The relationship of senior technicians with political authorities is a sensitive area, but its importance is such that it deserves careful thought and the highest priority.

3. *Training of working technicians*

Countries vary considerably in availability of technically qualified persons. To those countries that are in short supply even of technicians with limited training, it may seem that, with the increased availability of such technicians, rapid progress would follow. But in many countries well endowed with technicians progress is far slower than would appear reasonable. What was said previously about the need for strengthening linkages applies equally to working technicians, but to enable working technicians to take account of such linkages it is necessary to provide formal mechanisms to that end.

E. Order and manner of training

There is a strong temptation to start a training effort at the level of working technicians by sending single individuals for training in a developed country. The presumed justification is that such individuals will come back to their countries and introduce the new ways of doing things to their own organization. As one who has participated in such training efforts, I have become convinced that this is not a promising approach. Apart from the question of the relevance of his training to problems in his country, the single individual who has learned new ways of doing things in another country is easily overwhelmed on his return. Few self-respecting bureaucrats anywhere will embrace strange ways introduced by a single subordinate.

A more promising approach is to introduce new methods from the top down, each succeeding layer absorbing more detail. When a man's superior adopts an approach as his own, his subordinates are far more receptive than in the reverse case.

Because of the importance of communication among participants, it is desirable that training should be in groups that would actively and professionally communicate with each other. After an initial period of formal training, more informal "learning by doing" activities should be organized in which persons who work together engage in a real activity in accordance with the framework that was taught in the formal sessions.

The methods that have been discussed are relevant to all levels of authority — political authorities, senior technicians and working technicians — because these methods can serve as a basis for communication. Any training programme for a particular group would provide different emphasis and detail. For example. political authorities would be especially concerned with values, objectives, instruments and corrective action, but would have to be aware of all connexions. Senior technicians would be especially concerned with data, predictive methods, criteria, measurement and the harmonization of different elements. In training working technicians, it would be necessary to take objectives and criteria as given and concentrate on detailed methods of shaping projects and programmes and carrying out projects.

F. Methods for economic administrators

The problem of methods for economic administrators can be discussed with reference to an analogy. Let us suppose that we wanted to train a group of engineers in two years so that they could organize an automobile industry in a newly developing country. What kind of technology should the engineers be taught? How much should they learn about fuel cells, turbo-jet engines or hovercraft? It would be foolhardy to invest much in these fascinating and promising fields. It would be more prudent to concentrate on the proven elements of automative technology. Similarly, the techniques taught to economic administrators should be those whose worth is proven. Even proven techniques will require considerable adaptation to the conditions of the newly developing countries. While training programmes will necessarily touch on the more complex techniques, particular stress should be laid on the limitations, special requirements and pitfalls of such methods.

For example, some use of input-output analysis, even if in only rudimentary form, is inevitable. It is important for administrators to understand the data requirements and the dangers of aggregation — considerations which argue for great caution in pushing for immediate reliance on elaborate input-output models in newly developing countries. Somehow they must learn to discriminate between interesting techniques that may be useful ten or twenty years hence and realistically dependable techniques that they can put to use in their own countries in the immediate future.[4] Just as it would be folly for a plant manager to attempt to make a fuel-cell-engined car, so it is foolish for administrators to depend on methods that far exceed their immediate data capability or other capabilities. The distinction between an interesting research and development possibility and something that can be put to work right away is an important one. Where there are techniques which are considered sufficiently promising, it is desirable that a research and development effort be set up in a way which will not prejudice a going operation. Sometimes such research and development efforts may have to use actual jobs as pilot studies, but they should be approached as pilot studies. The resources going into research and development should be explicitly earmarked. That there should be such efforts is not to be denied. In fact, it would seem that international agencies have a special obligation to finance and direct such efforts.

(a) *Aggregate planning*

The process of drawing up the aggregate plan has been described on a very simple basis in the two volumes of *Programming Techniques for Economic Development* (ECAFE). These two volumes can serve as a text for introducing the subject to top political authorities and senior technicians. The group of experts that prepared these two volumes rendered an important service in providing a basic training document in this area. Were it used as a training document in a few countries, under close observation, there would doubtless be a basis for improving it further.

(b) *Project analysis*

The process of project analysis has not been subject to the same kind of development. As was said in discussing common deficiencies in present economic development efforts, there has not been an agreed framework for project formulation and evaluation.

Proven methods for project analysis exist that are appropriate for profit-making organizations. Some features of these methods are applicable to any effort to use resources economically. But it is obvious that they are not appropriate as they stand, if we are interested in analysing projects from the point of view of the economy. This is particularly true for the newly developing countries. The basis for project analysis in newly developing countries has received considerable attention in the economic journals and works of economists. While these discussions have been thorough and exhaustive, they tend to be general, fragmented, and non-operational. In 1961, the writer and a Turkish colleague devised a framework for the formulation and evaluation of projects, designed to fill important needs in the newly developing countries.[6] This system specifies three points for a project as a matter of routine: data required; format of the data, and criteria to be applied.

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[4] In the report (*Programming Techniques for Economic Development*) by the first group of experts on programming techniques organized by the United Nations Economic Commission for Asia and the Far East, Bangkok, 1960, three levels of econometric models are given according to countries, with special reference to Asia and the Far East.

[5] See *The Management of Corporate Capital*, edited by Ezra Solomon, a publication of the Graduate School of Business, University of Chicago, Third Series (Free Press of Glencoe, Illinois), Eugene L. Grant and W.G. Ireson, *Principles of Engineering Economy* (Ronald Press Company, New York, 1960); James B. Weaver, H. Carl Bauman and W.F.Heneghan, "*Cost and Profitability Estimation*"; *Chemical Engineers' Handbook*, Fourth Edition, McGraw-Hill, New York, 1963), section 26.

The formal criteria suggested are crucial for economic growth, but the system is sufficiently flexible to accommodate the particular social and political values of the decision-makers. The system is a synthesis of the thinking and practices of engineers and economists, with special reference to newly developing countries. With the possible exception of the format for worksheets, all the features of the system have appeared elsewhere in the relevant literature. The uniqueness of the system lies in its integration of many previously discussed elements into a unified and operational system. It has been tested in a variety of teaching and operating situations and reflects numerous modifications that were indicated as desirable. While it cannot be regarded as the last word, in the judgement of virtually all persons who have worked with the system it represents a very significant improvement over existing systems. Its most decisive advantage over existing systems is that it combines the many economic dimensions of a project in a way which facilitates decision-making. Apart from inherent advantages of the system, its influence towards standardization can bring important benefits. The standardization can improve communication, promote badly needed teamwork, help overcome narrow and inappropriate professionalism and facilitate direction, review and training of personnel.

The Organization of American States sponsored a workshop on project evaluation for Venezuela in the summer of 1964 and another for Central America in February and March of 1965. In both workshops, technicians with responsibilities in the formulation and/or evaluation of projects participated in a two-week seminar and then proceeded in groups to prepare real projects under the guidance of instructors.

While the training of working technicians is very successful, it has become painfully obvious that the little contact we have had with the political authorities and the senior technicians has been insufficient really to install the proposed system of project analysis. In fact, we may have increased the gulf between technicians and political authorities. It is clear that it is necessary first to reach the political authorities, then the senior technicians and lastly the working technicians.

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[6] The latest published version is the text used in the workshop held in Central America in the early part of 1965: *Análisis de proyectos, un sistema de formulación y evaluación de proyectos especialmente aplicable a los países en vías de desarrollo.*, by Morris J. Solomon and Osman Edin, Organization of American States, UP/G, 22/1, 15 January 1965. Original: Spanish.

G. Pert system of planning and implementation

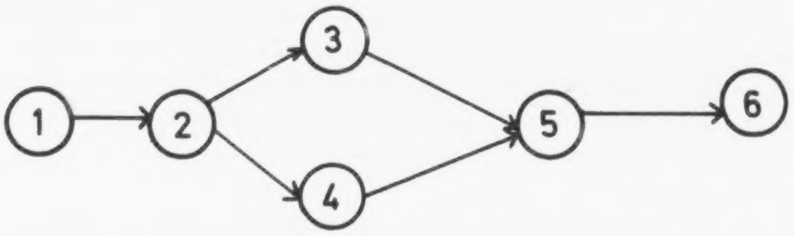
In any of the steps of economic development, objectives have to be translated into specific time-phased goals, results measured, the two compared and remedial action taken. This is particularly true of projects and programmes.

In the last eight years, a formal system for detailed planning, scheduling and review of action has emerged, which has great promise for newly developing countries. This is the PERT system (Programme Evaluation and Review Technique). PERT complements a project analysis system with some overlap. In fact, it may be said that no project is formulated until it has been expressed in the PERT form. In the PERT system, a plan for a project (or programme) may be represented as a network of nodes and arrows.

The symbols are as follows:

0 Event
⟶ Activity

Thus a simple network would be as follows:



where the nodes have the following meaning:

1 = Approval of project;
2 = Engineering specifications accepted for bid purposes;
3 = Request for bids for machinery mailed out;
4 = Request for bids for plant mailed out;
5 = All bids received;
6 = All contracts awarded.

In 1 ⟶ 2, the arrow denotes the drawing up of engineering specifications.

In 2 ⟶ 3, the arrow denotes preparation and mailing out of bid specifications for machinery.

In 2 ⟶ 4, the arrow denotes mailing out of bid specifications for plant.

In 3 ⟶ 5, the arrow denotes preparation by vendor and mailing of bids on machinery.

In 4 ⟶ 5, the arrow denotes preparation by vendor and mailing of bids on plant.

In 5 ⟶ 6, the arrow denotes selection of bids and drawing up of contracts.

(For details on the use of PERT, the reader is referred to the self-teaching volumes I, II, and III of *PERT Fundamentals*, published by the PERT Orientation and Training Centre, Washington, D.C.) [7]

Estimates of the time required for each activity give a basis for determining the path which is critical, that is, the path (of activities) which limits the completion of the project. A project of any magnitude would ordinarily be broken down into many activities with many paths. By concentrating on the path (of activities) that are most limiting, one can often reduce the time it takes to complete the project. The execution of the project uses as a target a detailed time and cost schedule. This time and cost schedule (by activity) forms the basis for control of the execution of the project. Ordinarily each activity has an expected completion time which is short enough to give early warning that the project is not meeting its time or cost schedule along with promising lines of corrective action. Corrective action can take a variety of forms, as described previously.

When the PERT technique is combined with cost information, an integrated system for project implementation is achieved. The PERT method is an excellent framework that can supplement the project analysis framework of the Organization of American States. It provides:

(*a*) a disciplined basis for detailed planning of a project;

(*b*) a clear picture of the scope of a project;

(*c*) a method of evaluating goals;

(*d*) a means of preventing omission of activities that naturally belong to the project;

(*e*) a definition of the responsibilities of the various groups or departments involved;

(*f*) an aid in refining the design of a project;

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[7] The reader is advised to exclude from consideration chapters 5 and 6 of volume II. These two chapters deal with probability considerations which are of dubious value.

(*g*) an excellent vehicle for training;

(*h*) a basis for measuring progress, comparing goals with achieved results and initiating corrective action.

H. Organizing for economic development

An important instrument of economic development is organization. While some of the techniques discussed can facilitate the carrying out of economic development, the organization of government can help or hinder the effort. By now it must be apparent that the linkage effects and the harmonization of different elements is perhaps of overriding importance. In this regard, solutions that have been successful in analogous situations can be instructive.

First, it is desirable that, wherever practical, the planning and execution should be united in the same group. Secondly, if the planning function is specialized, then there should be formal coupling devices. For example, at some point in the planning of a project or programme (even if towards the end), the person or group responsible for execution should be briefed and the planning should not be regarded as completed until he or it is willing to undertake the responsibility for the execution of the planned effort and to meet costs and schedules. This overlap is absolutely essential. As a minimum, the implementing group should agree to a detailed network of implementation and a schedule of costs. Preferably, there should be association earlier in the effort.

As the effort is implemented, review and controls should be in terms of the schedule of costs and should progress with maximum freedom of action for the implementing organization. The criteria of success must be meaningful, with strong incentives for success. Those incentives can be monetary or symbolic, preferably both. The adoption of a comprehensive and meaningful set of criteria can furnish a basis for rewarding good performance. Using incentives also implies using deterrents. Unless leadership is ready to distinguish between good performance and poor performance and take corrective action, good performance cannot be expected.

I. Some specific proposals for action

There is an urgent need for an agreed framework for the formulation, evaluation and execution of projects. Such a framework, based on a consensus, should be incorporated in a manual and other training material such as films, self-teaching course material, and other teaching aids. The purpose of the Interregional Symposium on Industrial Project Evaluation sponsored by the United Nations Centre for Industrial Development and held in Prague in October 1965, moved in this direction.

Following the adoption of such a framework, it is important that an intensive effort should be made in a few carefully selected countries to develop training materials and test those materials on actual projects. The political authorities of these selected countries should be, at the very least, receptive and accessible. The obstacles should not be so large as to preclude the successful use of promising approaches. While a crucial test for materials developed will be their success in the "pilot countries", an effort should be made to put such training materials in a form that is of general applicability to newly developing countries. This implies an expanded testing effort after promising materials have shown their value in a few countries. There should be frequent modifications in this material to reflect experience. Out of such an effort would come courses for various levels of economic administrators, including political authorities. While a large part of the effort would have to be directed towards project development, the programme should include all the steps of economic development and the full decision-making planning-action cycle. The whole range of management activities, including the very strategic element of full plant utilization, would necessarily be covered.

Parallel with and complementary to work in pilot countries would be an effort to develop a series of industry studies. Past efforts have been handicapped by a failure to adopt a format that is applicable to a great variety of situations.[8] A recent effort, representing an excellent example that can serve as a prototype for industry studies, is a study on the flat glass industry prepared by Lee Charles Nehrt of Indiana University. By referring to the study, and relating the data to conditions in his own country, an engineer or economist can readily determine the prospects for a sheet-glass plant in his own country. There is reason to believe that, using the Nehrt study as a prototype, a series of analogous studies could be produced for suitable industries which would be of value to a large number of newly developing countries. This is clearly a task for an international agency. The creation of industry studies is an activity that can be parcelled out to qualified persons or groups, provided there is a suitable prototype. A central co-ordinating group would be needed.

At a later point, it would be useful to carry out research on the development of a computer system to aggregate project variables so that macro-planning can be made to interact with micro-planning on a prompt and effective basis. A starting point for such an effort would be a country that has carried out project development on a comprehensive basis. This task is clearly one which can be started after some progress has been made with one or two pilot countries.

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[8] Two massive attempts to meet this need have been the plant requirement booklets put out by the United States AID Agency and the small-scale industry series put out by the Commission of Small-Scale Industry of India. An important deficiency of this material is that a particular configuration of a plant is given with very little basis for adaptation and choice according to the particular conditions of the country in question. Recent attempts by the United Nations to provide such data for these industries are in a more helpful form, but suffer from excessive presentation of history, leaving it to the reader to "normalize" such history. *Studies in Economics of Industry*, Number 1, United Nations, New York, 1963; *Programming Data and Criteria for the Aluminium Industry* (ST/ECLA/CONF.11/1.24).

ANNEXES

ANNEXES

ANNEX I

Address by Mr. I.H.Abdel-Rahman, United Nations Commissioner for Industrial Development, to the Inter-regional Working Party on the Training of Economic Administrators in Industrial Development

On behalf of the United Nations, I have great pleasure in welcoming all of you to this Inter-regional Working Party organized by the United Nations in co-operation with the Development Centre of the OECD. We are glad that we have had the honour and privilege of co-operating fully with OECD in this project. It is my sincere hope that such technical co-operation with the OECD and the Development Centre will increase in future, thus pooling our scarce resources for the benefit of the developing countries. I am very grateful to Mr. Kristensen for his personal interest in the meeting and sincerely hope that he will continue to express similar interest in our future joint activities. We in the United Nations are happy that the Government of France invited us to hold our meeting in Paris and that the courtesy and hospitality of Mr. Kristensen, Mr. Buron and his colleagues in the Development Centre made this meeting a reality. I wish to extend to the Government and Mr. Kristensen, Secretary General of the OECD, our heartfelt thanks.

Your deliberations from my point of view will have a "touch of originality" and a "flavour of pioneering", and they will also involve a "bit of a burden" in formulating positive action.

When I say that your deliberations will have a touch of originality, I am fully aware that yours is, in many ways, the first meeting to tackle systematically the problems of training of public officials in industrial development. Who would have thought of it in the later fifties and in the early sixties as something basic that requires systematic national and international action? It has now been realized that it is an acute problem and a matter of reality.

It is a fact that the State plays a basic role in promoting and accelerating industrial development. In this task, the Government and other public officials have to act as "public-sector entrepreneurs". The incentive of profit, at least for the formative period, is replaced by the incentive of responsibility. Government action or the concerted and co-ordinated action of government officials make all the difference between a stagnant and inefficient industry and a throbbing and smooth-running industry. In a positive sense, the Government becomes an entrepreneur in undertaking risks, investing and running industries. In another sense, it injects vitality through a series of policy measures. Thus the Government and public officials are called upon to shoulder important responsibilities.

If one were to directly conclude from this that there is a need for the training of public officials generally, it would amount to an underestimation of the valuable experience, important responsibilities and enormous courage displayed by the civil servants and public officials who often work in a difficult environment and working conditions. I can claim to have gone through this process myself and fully appreciate the magnitude of tasks faced in dealing with industrial development problems. I am sure, however, that you will agree with me that, if it is possible to look at our own work objectively once in a while, preferably away from the actual place of work, it will be both instructive and useful. We have called this process training of industrial economic administrators largely owing to lack of a better phrase. Whatever may be the proper terminology, you will agree with me that there is a need for an international dialogue on this question and hence this meeting.

I noted in some of the papers a query raised as to whether there is such a species as an industrial and economic administrator. After all, there are administrators, whether in medical administration or in industrial administration. This, again, is a problem of definition and needs clarification and possibly, as I said earlier, a better expression. On the other hand, a person is an instrument of activity and probably one should be more concerned with spelling out such activity. These are rather tempting subjects for discussion and I will try to refrain from entering into discussion on these at this moment. I am sure that you will have sufficient time to deal with it later.

I mentioned earlier that your work will have a flavour of pioneering. The translation of a need into a full-fledged programme of work involves an enormous amount of effort, clarification of ideas, and charting courses of action. I see in your agenda these problems brought up for discussion. I am sure your recommendations will pioneer the work in training in industrial development in developing countries.

I can see from the papers submitted to this meeting a number of interesting approaches to the subject. One of them refers to the need for distinction between the work involved in formulating a plan and the work involved in implementing it. On the face of it, they are rather closely interconnected. Yet if one analyses the various activities in an operational sense, interesting conclusions emerge. For example, one of the experts rightly indicates that, from a training point of view, you can always import expertise in the stages dealing with the formulation of a plan. On the other hand, the implementation of the plan has to be based on local talent and skills. This area appears to be more amenable and even urgent from the point of view of training.

From the quick observation of the material in front of you, I notice that suggestions are made for the training of different categories of persons, including politicians. I fully realize that government officials do not work separately from the political decision-makers. The effectiveness of their work will depend on the understanding and support of the final decision-makers. This means that there is a need for communication with the highest authorities and an appreciation of the political environment. To understand politicians and influence them is one question, and to recommend training for the highest decision-makers is, to my mind, an entirely different question.

I would like to take this opportunity to stress, as I remarked earlier, that you will have a bit of a burden in formulating positive action. This, to my mind, is a very important aspect of your work. If your deliberations can lead to formulating a programme of action, or at least the direction of effort required in tackling the important question of training, I would consider your deliberations most rewarding. We know that this is rather too much to ask within the short period of time of the meeting. On the other hand, I take encouragement from the fact that we have in you a wealth of experience, an array of disciplines, a fund of ideas which you can put to concerted use.

I will look forward to your recommendations and programmes of action to be implemented both by the national Governments and by the international organization engaged in promoting industrialization in general and industrial training in particular. We in the Centre for Industrial Development are in the process of undertaking vastly expanded programmes of work to promote industrial development in the developing countries, in which training is a vital part. We have organized four regional symposia in industrial development which will meet within the next six to eight months in Santiago, Addis Ababa, Kuwait and Manila. In these, about 100 Governments will participate. I am sure that they will look with interest on any programme of action that you may evolve at this meeting.

We in the Centre will also endeavour to implement your recommendations by organizing special training programmes as we did at Cairo recently. I am sure that you will have a close look at the experience of that programme, which is contained in one of the discussion papers submitted to this meeting. We can assist Governments in formulating training programmes based on your recommendations. We can also provide expert assistance and other assistance in depth through Special Fund resources. Several institutes of training are already functioning, aided by the Special Fund. We could arrange technical meetings to clarify issues and prepare the necessary training manuals. I wish to mention some of these only to provide some background and framework to your recommendations. The Development Centre also has similar programmes and your recommendations will spur further action in the area.

I have now a very special and pleasant task before I complete my statement. I would like to take this opportunity to suggest to you Mr. Etienne Hirsch as chairman of this meeting. He is a distinguished Frenchman and the OECD Development Centre, as the host organization, has kindly agreed to provide the services of Mr. Hirsch as our chairman for the working sessions. I would consider it very lucky that we should have such an eminent man available to undertake this rather interesting but hard work. Mr. Hirsch is a distinguished economist and the man behind the French plans. He was Commissioner General for Planning in France and has distinguished himself in many international jobs. He was the President of Euratom and is now advisor to several developing countries in planning. It is my sincere hope that he will accept this arduous job and I also hope that you will accept my nomination of Mr. Hirsch unanimously.

Lastly, I wish to thank you all for taking the trouble to come and devote yourselves to this important subject. I wish to extend to our hosts, the French Government, the Secretary General of the OECD and the staff of the Development Centre, our grateful thanks. I am sorry I will not be able to attend all your meetings, much as I would like to, but you will, I am sure, under Mr. Hirsch's chairmanship, be able to produce an interesting programme of action.

ANNEX II

Organization of the Working Party

The Interregional Working Party on the Training of Economic Administrators in Industrial Development met in Paris from 2 to 10 September 1965. It was organized by the United Nations Centre for Industrial Development and the Bureau of Technical Assistance Operations in co-operation with the Development Centre of the Organization for Economic Co-operation and Development (OECD).

The Working Party was attended by representatives of twenty-five countries, by a small group of expert consultants and by an observer from the Federal Republic of Germany (see annex III). The United Nations appointed Mr. G.S.Gouri as the Director of the Working Party and Mr. François van Hoek was appointed Co-Director by the OECD Development Centre.

Twelve discussion papers, prepared by the expert consultants, the United Nations Centre for Industrial Development and the Development Centre of the OECD, were presented to the Working Party. Participants prepared country reports on the subject of their choice, giving an account of their country in so far as it related to a particular item or items of the agenda.

The opening session of the Working Party was presided over by Mr. Kristensen, Secretary-General of the OECD. Mr. Gruson, on behalf of the French Government, welcomed the participants to France. The United Nations Commissioner for Industrial Development, Mr. I.H.Abdel-Rahman, after greeting the participants on behalf of the United Nations, described the main purpose of the meeting and expressed the hope that the Working Party would be able to draw up suggestions for further action.

On the proposal of Mr. Abdel-Rahman, the Working Party unanimously elected Mr. Etienne Hirsch, former Commissioner General for Planning in France, whose services had been made available by the OECD Development Centre, as Chairman of the Working Party.

The procedure in discussing the various items consisted of the presentation of the subjects under a given item by an expert consultant. This initiated the discussion of a given item illustrated by country experiences as contained in the country papers submitted to the meeting and other experiences which the participants and expert consultants had had in their present and previous functions.

After completing the discussion on the various items of the agenda, the Working Party appointed a drafting committee to prepare a report of the meeting. The drafting committee consisted of the following persons: Mr. H.Franco Bravo (Colombia), Mr. A.M.K. Mazari (Pakistan), Mr. T.Mazigh (Tunisia), Messrs. D.Carney and C.Furtado (expert consultants), the Chairman of the Working Party and the Director and Co-Director.

ANNEX III

List of persons attending the meeting of the Inter-regional Working Party

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